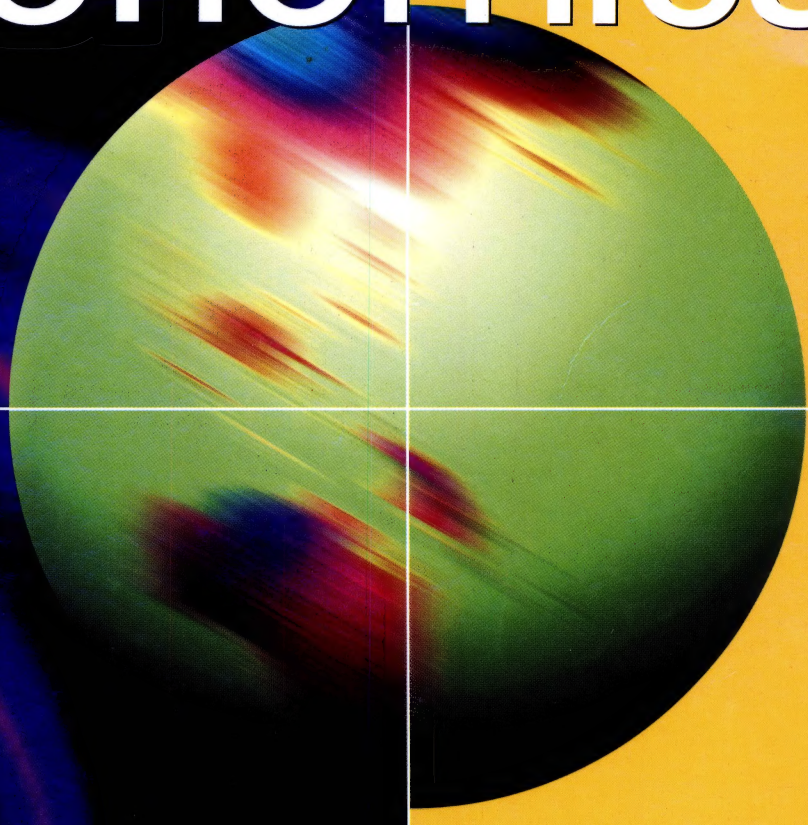
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PREFACE

We are very pleased that the continuing success of *Economics*, which first appeared in 1980, has driven the publication of the sixth edition in 2000. This sixth edition is in the form of two books, *Microeconomics* and *Macroeconomics*, which, for both theoretical and practical reasons, are very different from the first *Economics*. Theory has developed, but, more importantly, so has the pedagogy for teaching it in the best way. Practically, the world of economics has also changed. In particular, many parts of the Australian economy have been transformed, and we are competing in an increasingly global environment.

Revision of a large economics textbook, although a daunting and time-consuming task, provides the opportunity for improvements to be made at many levels. The reader familiar with the earlier editions will find many changes in the sixth edition. These include significant reorganisation of material, and complete rewrites of some sections, as well as the addition of a significant amount of new material and new features. These extensive revisions reflect several influences, including our own view of needed improvements, as well as the insights and suggestions of the many colleagues and students around Australia who made comments on the fifth edition. Pedagogical improvements have been a priority. Equally important, however, have been the needs to update Australian examples and applications, extend the regional and global view, and refresh many of the analytical approaches.

The basic purposes of the texts remain unchanged: to introduce the new student of economics to those principles essential to an understanding of fundamental economic problems, and to make clear the policy alternatives that Australian society may use to cope with these problems in an international context. It is hoped that the ability to reason accurately and objectively about economic matters, and the development of a lasting interest in economics will be two valuable by-products of this basic objective. The emphases of these books is on the clear exposition and logical organisation of economic principles, and on the need to present many applications of the analysis, as well as an introduction to the facts and institutions of the economy. The text is basically concerned with the principles of 'mainstream' economics; however, in writing the text we recognise the ideology of market capitalism at the outset, while criticisms of the mainstream are acknowledged throughout. The texts also include both empirical support and critiques of each part of the analysis. We believe that this balanced approach will best allow readers to form their own views about the faults and limitations of mainstream ideas, while providing an introduction to economics which can be readily used to analyse economic debates in both the public and private sectors.

ORGANISATION AND CONTENT

Microeconomics

The material in the *Microeconomics* volume is organised under five basic topics:

Part 1 Introduction to economics

Part 2 An overview of microeconomics

Part 3 The economics of markets

Part 4 The role of government

Part 5 International economics.

Part 1 (Chapters 1 to 3) introduces the student to the method and subject matter of economics. Chapters 1 to 3 are the same in both books, but establish a foundation and context for different material in the later chapters. The subject of Chapter 1 is the methodology of economics, while Chapter 2 provides both definition and analysis of the nature of the economising problem. Chapter 2 also briefly introduces the alternative frameworks within which the economising problem may be solved. Chapter 3 introduces the demand–supply model and its application in economic analysis.

Part 2 develops the notion of the most fundamental institution of capitalism—the market, or price, system. Early emphasis on the price system (Chapter 4) is designed to provide the necessary orientation for the detailed treatment of pricing found in Part 3. Chapter 5 provides an introduction and review of the factual characteristics of the organisation of production in the private sector of the Australian economy.

The treatment of pricing and resource allocation in Part 3 is purposely detailed. After Chapter 6's review of supply and demand analysis and price elasticity, Chapter 7 analyses consumer behaviour, and includes an introduction to indifference curve analysis. Chapter 8 follows with an introduction to the alternative market structures and their implications for economic efficiency.

In Chapter 9 we switch to the supply aspects of the product market and examine short-run and long-run costs. Throughout Chapters 10 to 13, emphasis is placed on the social implications of the various market structures. What is the significance of each market structure for price and output levels, resource allocation and technological progress? Emphasis in the discussion of distribution—Chapters 14 to 16—is generally in accord with the relative quantitative importance of the various market shares in our economy. Labour markets are discussed in detail.

Part 4 introduces government in its role as an agent for change under modern capitalism. Chapter 17 considers the importance of market failure—through the presence of externalities and public goods—as justification for government intervention in the market system. Chapter 18 introduces the concepts of inequality and poverty, providing both technical definitions of the issues and an evaluation of the impact of government on income distribution in Australian through the taxation and social security systems.

Part 5, Chapter 19, focuses largely on the microeconomic issues surrounding trade. Particular emphasis is placed on the free trade versus protection debate, and the impact of protective devices such as tariffs and quotas on economic efficiency. Chapter 19 also provides a useful review of the history of industry assistance and assistance policy in Australia, and a review of GATT and the role of the WTO.

Macroeconomics

The material in the *Macroeconomics* volume is also organised under five basic topics:

Part 1 Introduction to economics

Part 2 Macroeconomic activity and fiscal policy

Part 3 Monetary policy and economic stability

Part 4 Growth and development

Part 5 Exchange rates and the international monetary system.

Part 1 (Chapters 1 to 3) is designed to introduce the method and subject matter of economics, and also the ideological framework of the Australian economy. Chapters 1 to 3 are the same in both books, but establish a foundation and context for different material in the later chapters. The subject of Chapter 1 is the methodology of economics, while Chapter 2 is devoted to defining and explaining the economising problem. Chapter 2 also examines the economic basis for trade. Chapter 3 provides an introduction to the most fundamental institution of capitalism—the market, or price, system—through its introduction to the supply–demand model. This is designed to contribute to an understanding of employment theory in Part 2—specifically, the topics of inflation and deflation.

Part 2 introduces the student to mainstream macroeconomic theory and fiscal policy. Chapter 4 is on national income accounting and the Australian balance of payments. Some lecturers may choose to truncate this discussion by omitting the income approach to GDP, which some may consider to be less relevant to the following chapters than the expenditures approach. Chapter 5 reviews the characteristics, causes and consequences of cyclical fluctuations and Australia's current account problems. There is also a related discussion of national saving. Chapters 6 and 7 present the aggregate expenditures model.

Chapters 8 and 9 provide a detailed examination of macroeconomic employment theory—fiscal policy and the public debt within the AD–AS format. The presentation of the key 'determinants' of each of the aggregate demand and aggregate supply curves is an important feature of these chapters. The impact of the foreign sector on both aggregate demand and the effectiveness of fiscal policy introduces the student to some of the complexities facing the modern policy-maker.

Part 3 emphasises the balance-sheet approach to money and banking. This approach seems most in accord with the goal of providing the student with an analytical tool needed to reason through, as opposed to memorising, the economic impact of the various basic banking transactions. Just as fiscal policy is linked directly to income theory in Part 2, monetary policy immediately follows the discussion of money and banking. As with fiscal policy, the impact of the foreign sector on the effectiveness of monetary policy is discussed in detail. In Chapters 13, 14 and 15 there is considerable discussion of some of the alternative schools of economic thought followed by a rather detailed look at the relationship between inflation and unemployment, incomes policies, the history of wage setting in Australia, and related policy issues.

Part 4 provides a brief introduction to economic growth and development, and to related problems and controversies.

The two chapters of Part 5 survey international trade and finance, providing coverage of elementary models of the determination of exchange rates, and a broad review of the international monetary system and its history.

THE SIXTH EDITION: REVISIONS

For readers familiar with the fifth edition, a few comments on the main revisions in the sixth edition may be helpful. The revision is a major one for six principal reasons.

Firstly, the sixth edition is presented as two texts: *Microeconomics* and *Macroeconomics*, reflecting the reality that many students study either microeconomics or macroeconomics as part of a business course.

Secondly, the date of publication of the fifth edition meant that most data and many institutional details and policy matters needed to be substantially updated. This is especially apparent with the chapters on the financial system in *Macroeconomics*, particularly Chapter 12 on monetary policy. The presentation of monetary policy is now consistent with the approach stated by the Reserve Bank of Australia.

Thirdly, we have modernised the analytical treatments and rewritten and reorganised the material so as to improve the pedagogical value of the text, and have significantly reduced the total number of chapters. For *Microeconomics* these changes include the addition of material on contestable markets when discussing market structures. For *Macroeconomics*, the initial presentation of the aggregate demand – aggregate supply model now clearly distinguishes between short-run and long-run aggregate supply.

Fourthly, the opportunity has been taken to further 'internationalise' the treatments so that Australia's position as a small open economy can more easily be understood in a global context. In both *Microeconomics* and *Macroeconomics*, Chapter 2 introduces the student to the economic basis for trade, while Chapter 3 applies the supply–demand model to the analysis of the value of the exchange rate.

Fifthly, the sixth edition has been completely redesigned to provide a fresher, more user-friendly book. As noted in the following section, 'Economics with the student in mind', there have been important additions to the features of the text, particularly the Asian Focus and Business Implications material.

Finally, in response to requests from reviewers and users of the text, we have added a number of new chapters. In *Microeconomics*, these include discussion of public goods and externalities. In *Macroeconomics*, we have provided a chapter covering elementary models of the exchange rate.

ANCILLARIES

Central to the learning process is the *Study Guide*, which has been completely revised for the sixth edition. Each chapter of the *Study Guide* has a number of elements designed to improve the study process of students. These include: an introduction which links (where relevant) work in the current chapter to that of previous chapters; a checklist of objectives for the student; chapter outline; key terms and concepts; problems and projects; solved problems (to provide an example of the 'economic' approach); and self-test questions. Overall, changes to the *Study Guide* reflect a need to allow students to engage in more self-directed study. The *Study Guide* has proved to be a valuable learning tool in the past, and many instructors may find it useful in tutorials, while for courses with external students it will be an indispensable resource.

Adding further value to the overall economics package is the second issue of *Real World Economics: A Media Review*. Following the content outline of the texts, this book contains readings gathered from Australian and Asian newspapers and journals, specific to relevant topics raised in each chapter. In addition to the article, each chapter contains a section which contextualises the

real world concepts with theory, questions about concepts that escalate in depth and difficulty, hints that provide a framework for answers, and a final word on current issues in the media. New to this edition is an update feature, where there will be six new articles, with accompanying material, posted on the Web biannually. This translates into an annual update of a third of the material, keeping the real world applications current and fresh. This book provides a valuable current events resource, with references to major sources of economic information on the Internet.

Also available to students is MaxMark, an online quizzing system. Feedback is provided in two levels, the first supplying the answer and a paragraph of explanation, the second with an extract from the text. MaxMark enables students to track their results, providing an individual progress indicator.

To assist lecturers in delivering their courses, an *Instructor's Resources Manual* has been prepared for the sixth edition. The manual includes solutions (bound version or disk), and *PowerPoint*™ overheads of figures are also available. A computerised *Test Bank* of multiple choice questions will be available to adopters of the text.

WEBSITE

Microeconomics and *Macroeconomics*, sixth editions, build on the strength of the fifth editions with their own websites. The site addresses are:

http://mcgraw-hill.com.au/mhhe/econ/jackson_micro/homepage.htm
http://mcgraw-hill.com.au/mhhe/econ/jackson_macro/homepage.htm

These Online Learning Centres will present students and lecturers with a monthly economics newsletter that discusses developments in our region and across the globe. There will also be links to other economics publications (such as the *Economist*, *Far Eastern Economic Review*, and *Australian Financial Review*), as well as links to important sources of economic data such as the ABS, the Department of Foreign Affairs, and the Treasury. Students and lecturers will also be able to provide feedback on the text to the authors via the websites, which will serve as a central access point to economic information in the Asia–Pacific region, including Australia.

ACKNOWLEDGEMENTS

McGraw-Hill and the authors would like to thank the people who assisted with reviews and comments on the book: Muni Perumal (University of Canberra), Paul Crompton (University of Western Australia), Ken Adams (University of South Australia), Jonathon Boymal (RMIT University), and Chris Bajada (University of Technology, Sydney).

The authors would also like to thank the staff at McGraw-Hill for their assistance with the development and production of the book, in particular Karolina Kocalevski, for initiating the changes to this edition; Jae Chung for continued support and bringing it to finalisation; and Ruth Ridgway and Judy Heinemann for the best editing we have yet seen. Thanks also to Jason Watters, for his help as research assistant.

Our thanks also to our families, friends and colleagues, without whose support and understanding this book would not have been possible.

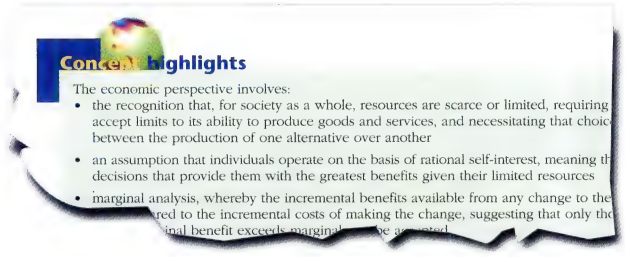
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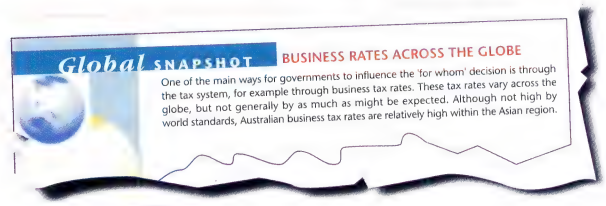
Economics with the student in mind

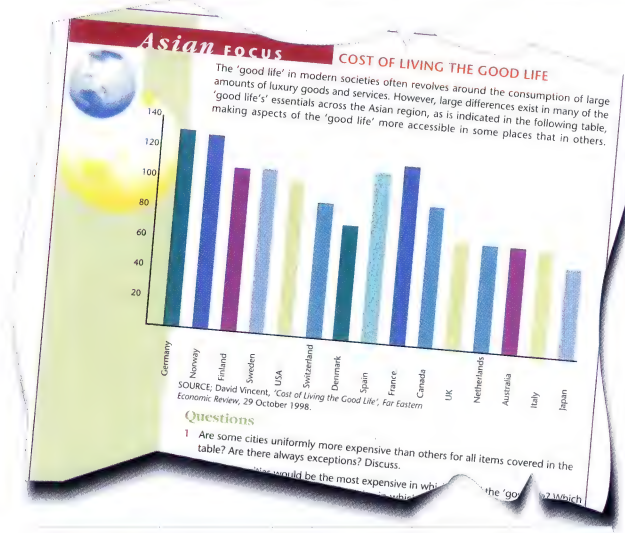
This book has been written with the beginning economics student in mind. The basic prerequisite of an understandable economics text is the logical arrangement and clear exposition of subject matter. This concern with organisation is perhaps most evident in Part 1, which centres on the step-by-step development of a comprehensive and realistic picture of Australian capitalism. This coherent group of introductory chapters is substituted for the traditional smattering of more or less unrelated background topics that frequently introduce the student to the study of economics. Throughout the text, the exposition of each particular topic and concept is directly related to the level of difficulty that the average student is likely to encounter. Simplicity in these instances is correlated with comprehensiveness and rigour, not brevity. Further, in the treatment of each basic topic—employment theory, money and banking, international economics, and so on—analysis is coupled with policy. A three-step development of basic analytical tools is often employed: (1) verbal description and illustration, (2) numerical examples, and (3) graphic presentation based upon these numerical illustrations.

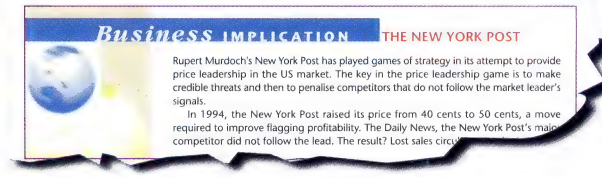
A clear agenda

Each chapter begins with a clear statement of the **learning objectives**. The organisation of concepts, headings and sub-headings, and accompanying figures and tables are all designed for clarity. **Margin definitions** focus attention on important concepts and allow for easy reference and review. New **concept highlights** throughout each chapter reinforce the central learning goals.



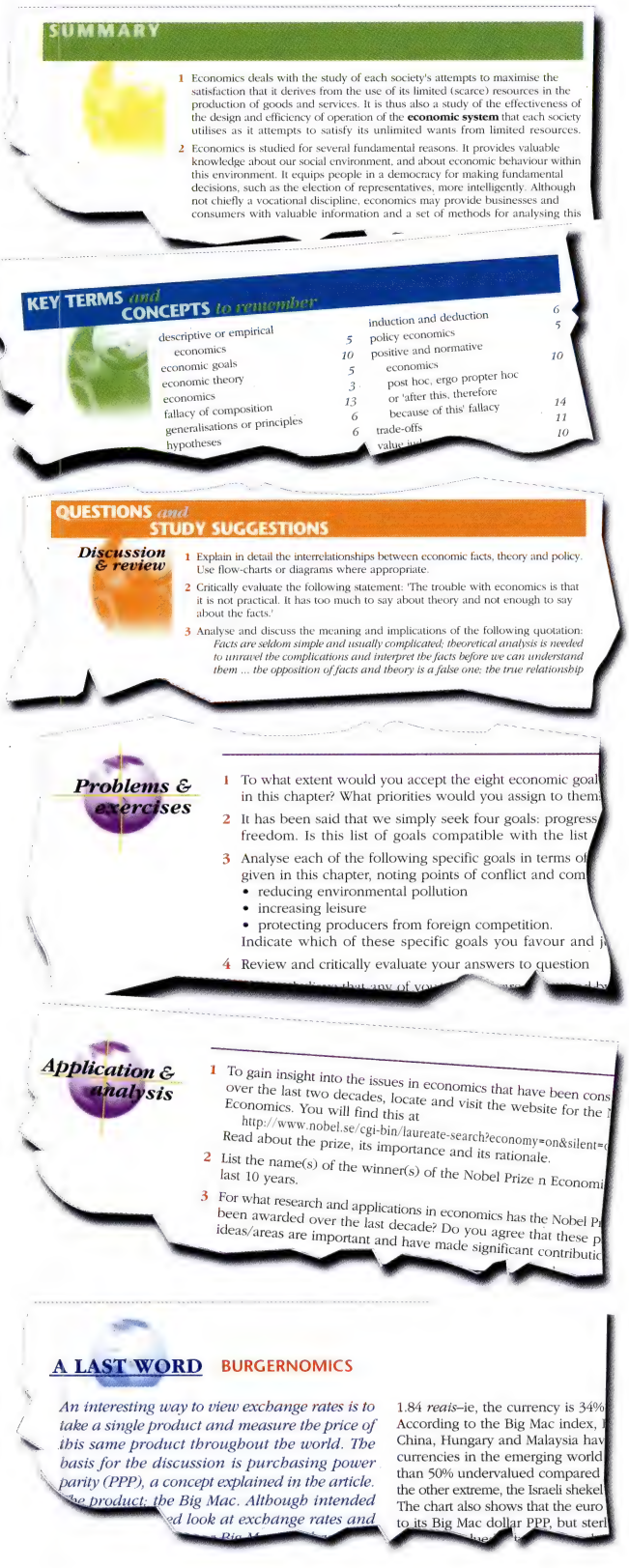






Applications and examples that make a difference

In order to illustrate Australia's role and relative position in the region and in the wider global economy, the sixth edition includes expanded **global snapshots** that provide useful and interesting data relevant to each chapter. The book now includes more narrative, analysis, and discussion of implications of the data, plus new critical-thinking questions for students. There is a particular emphasis on countries in South-East Asia, which are compared with Australia on a wide range of topics. New **Asian focus** sections serve as a focus for regional discussion, and new **business implications** features discuss various economic issues affecting high-profile companies, as well as assessing the broader business implications of various economic policies and problems.

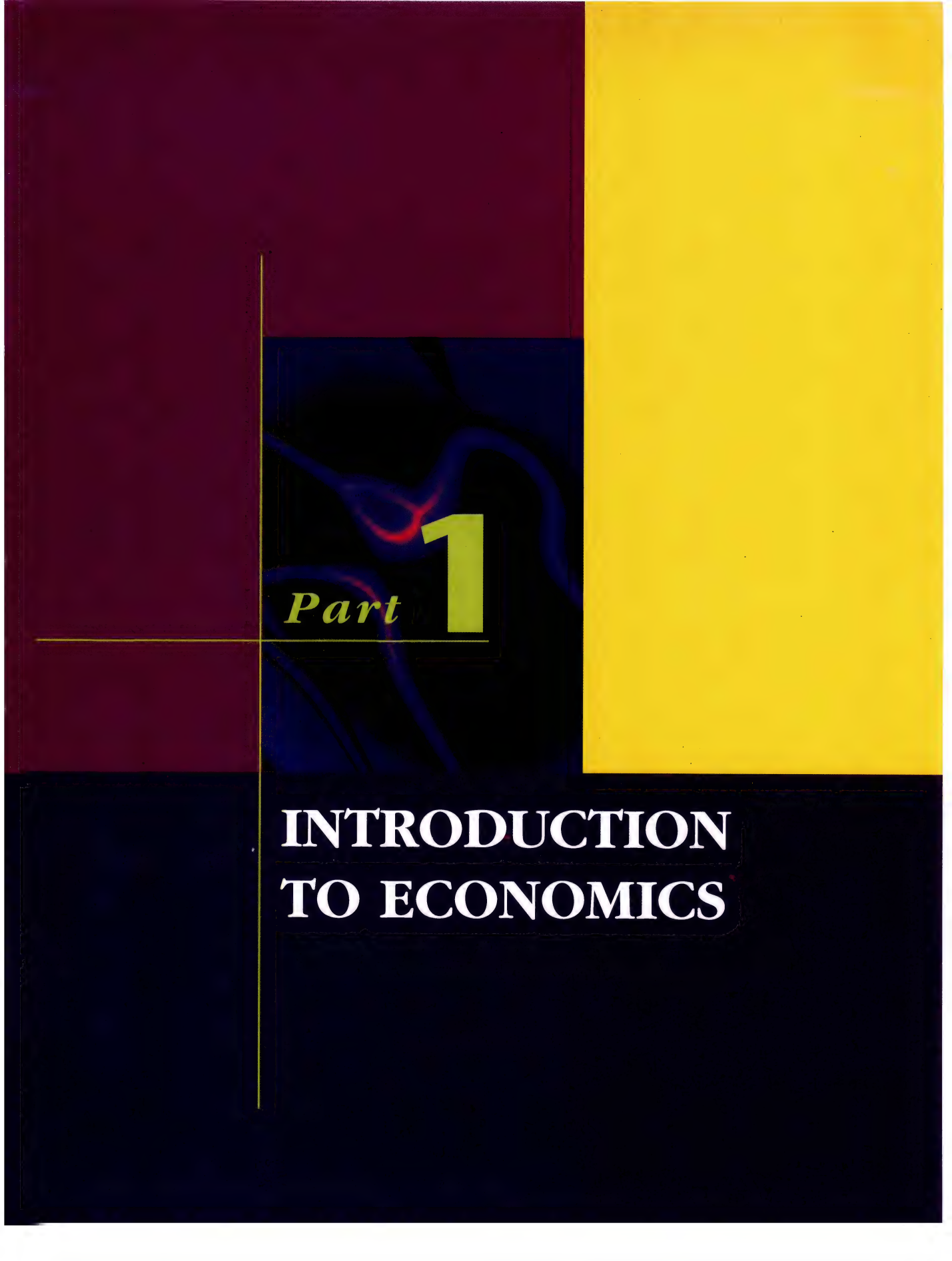


Measurable results

End-of-chapter **summaries** provide a clear, concise recap of each chapter. Each summary is followed by a list of **key terms** and concepts encountered in that particular chapter. Because the introductory course is heavily imbued with terminology, this listing will prove helpful. Much thought has gone into the end-of-chapter questions and study suggestions. **Discussion & review** questions are useful for tutorial purposes and designed to highlight the main points of each chapter. **Problems & exercises** are diagrammatic and numeric problems which require the student to derive and manipulate key concepts and relationships, and **application & analysis** activities include Web-based exercises that teach substantive economic concepts and reinforce technology-based research skills. The text includes a comprehensive glossary.

Theory in context

At the very end of each chapter a '**last word**' appears. 'Last words', many of them new to this edition, have been strengthened with critical analysis questions at the end of each article. These extracts from books, journals, newspapers and magazines have been chosen to serve different purposes. Some illustrate real-world applications of economic concepts; others reveal human-interest aspects of economic concepts; and still others challenge the concepts and interpretations of mainstream economics. 'Last words' serve as a useful basis for tutorial or class discussion, as well as encouraging the reader to reflect further on the material presented in the text.


Part 1
INTRODUCTION TO ECONOMICS



Chapter 1 THE NATURE AND METHOD OF ECONOMICS

INTRODUCTION

Human beings, we unfortunate creatures, are plagued by our wants. We want, among other things, love, social recognition, the material necessities of life, and its comforts. Our striving to improve our material wellbeing is the principal concern of economics. How do we 'make a living'—how do we satisfy our material wants for goods and services? By putting to work our productive resources, both human and material. It is the function of the **economic system** to organise the production, exchange and consumption of goods and services.

Unfortunately, we must recognise that, while our total wants for goods and services are *unlimited*, the resources available to provide these goods and services are *limited*. This unyielding fact of economic life provides the key to our preliminary definition of **economics**. *Economics is concerned with the efficient use of limited productive resources for the purpose of attaining the maximum satisfaction of our material wants.* Many of us think of economics in terms of specific problems—balancing the household budget, unemployment, poverty, taxes, debt, inflation, trade deficits, pollution and so on. Although limited in its scope, this thinking is not incorrect. These individual problems are fragments or signs of the larger problem of our attempt to satisfy our material wants in the face of limited resource availability.

Economics: is concerned with the efficient use of limited productive resources for the purpose of attaining the maximum satisfaction of our material wants.

It is tempting for us to immediately seek out answers and solutions to the economic problems of current concern; however, we must first deal with the following preliminary questions:

LEARNING OBJECTIVES

- **Of what importance or consequence is the study of economics?**
- **How should we study economics? What are the proper procedures? In other words, what is the methodology of economics?**
- **What specific problems, limitations and pitfalls might we encounter in studying economics?**
- **What is the 'economic perspective'?**

THE AGE OF THE ECONOMIST

Is the study of economics worth your time and effort? More than half a century ago, John Maynard Keynes (1883–1946), one of the most influential economists of the twentieth century, offered a response:

> *The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.*[1]

Many of the modern world's ideologies have been shaped by the ideas of the great economists of the past: Adam Smith, John Stuart Mill, David Ricardo, Karl Marx, Joseph Schumpeter and John Maynard Keynes.[2] More recently it has become common practice for world leaders to receive and use the advice and policy prescriptions of economists. In Australia, the Prime Minister and Cabinet Ministers are advised by economists from various branches of the Australian Public Service, including the Departments of Treasury and Finance, the Australian Taxation Office and the Productivity Commission, and by economists from the Reserve Bank of Australia and from many of our universities.

The spectrum of economic issues with which political leaders must grapple, and for which they may need expert analysis, is very broad. It includes: unemployment; economic growth and productivity change; poverty; the implications of the structure of the balance of payments; labour market issues; discrimination; education and training; pollution; competition policy and the regulation of big business; foreign investment in Australia; immigration; and the public versus private supply of services.

ECONOMICS FOR CITIZENSHIP

A basic understanding of economics is essential if we are to be well-informed members of our society. Most of society's current problems have important economic aspects and, as voters and lobbyists, we can influence the decisions of our political leaders in managing these problems. Should Australia further reform its tax system? What is the future of health care? What can really be done to reduce unemployment? Are existing social security programs effective and justifiable? Should we subsidise farmers? Is there any justification for protecting certain industries from foreign competition? Should income be distributed more equally? Since the answers to such questions are partly determined by our elected officials, a display of intelligence at the polls requires that we have a basic working knowledge of economics.

ECONOMICS IN BUSINESS

A knowledge of economics is vital to business. An understanding of the overall operation of the economic system places business managers in a better position to formulate strategies. The manager who, say, understands the causes and consequences of inflation, is better equipped during inflationary periods to make intelligent decisions. Indeed, many economists are employed by large companies to gather and interpret economic information upon which rational business decisions can be made.

PERSONAL APPLICATIONS

Economics also gives the individual, as worker and income receiver, some insights into how to protect oneself from the effects of inflation and

unemployment. How might one 'hedge' against the reduction in the purchasing power of the dollar that accompanies inflation? What occupations are most immune to unemployment? What are the best personal investment decisions?

In spite of the practical benefits of economics, however, you should be warned that economics is largely an academic, not a vocational, subject. Unlike advertising, corporate finance and marketing, economics is not primarily a 'how-to-make-money' area of study. Knowledge of economics may be helpful in running a business or in managing one's personal finances, but this is not its primary objective. In economics, problems are usually examined from the social, rather than the personal, point of view. The production, exchange and consumption of goods and services are discussed from the viewpoint of society as a whole, not from the standpoint of an individual managing a personal bank account.



Concept highlights

Although most of us will never work as economists, the study of economics is important to us because:

- it constitutes the basis of much government economic policy
- it informs those involved with the design of economic policy and analysis of its impact
- it improves our understanding of the economic consequences of economic and social policy, and makes us better informed citizens who can make better decisions when electing public officials
- it provides basic economic information and allows the interpretation of this information in ways that can assist in the making of rational business decisions
- it encourages us, and provides us with the techniques, to develop a social perspective on economic problems.

METHODOLOGY

What do economists do? What are their goals? What procedures do they employ? Three terms—*principles*, *policies* and *problems*—help guide us in answering the first two questions. Economists derive economic *principles* that are useful in the formulation of *policies* designed to solve economic *problems*.

The procedures employed by the economist are summarised in Figure 1.1. The economist may collect and analyse the facts that are relevant to consideration of a specific economic problem. This task is sometimes called **descriptive** or **empirical economics** (box 1). Economists may also generalise about the way individuals and institutions actually behave. Deriving such principles is called **economic theory** or 'economic analysis' (box 2). Finally, the general knowledge of economic behaviour that economic principles provide can then be used in formulating policies, that is, remedies or solutions for correcting or preventing the problem under scrutiny. This final aspect of the field is sometimes called 'applied economics', or **policy economics** (box 3).

INDUCTION AND DEDUCTION

As we see in Figure 1.1, economists are as likely to move from theory to facts in studying economic behaviour as they are to move from facts to theory. Stated differently, economists may use both deductive and inductive methods.

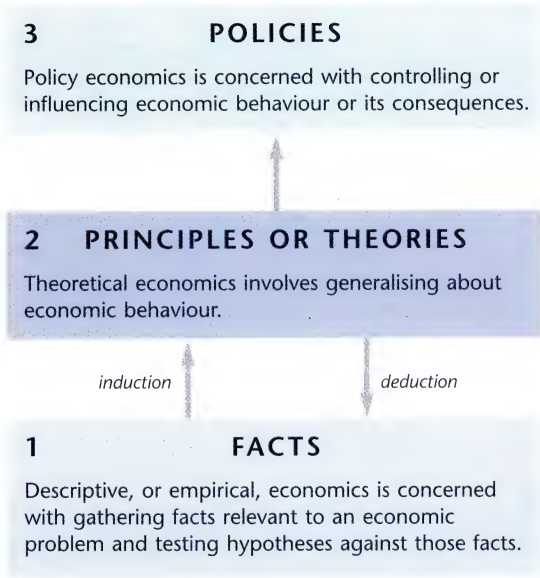


FIGURE 1.1
The relationship between facts, principles and policies in economics

In analysing problems or aspects of the economy, economists may use the inductive method, by which they gather, systematically arrange, and generalise from facts. Alternatively, the deductive method entails the development of hypotheses, which are then tested against facts. Generalisations derived from either method of inquiry can be useful, not only in explaining economic behaviour, but also as a basis for formulating economic policies.

When using the **inductive method** we begin with an accumulation of facts, which are then arranged systematically and analysed so as to permit the derivation of a **generalisation** or **principle**. Induction moves from facts to theory, from the particular to the general.

Economists may also go about their task by beginning at the level of theory and proceeding to the verification or rejection of this theory by an appeal to the facts. This is the **deductive**, or **hypothetical**, **method**. Thus, economists may draw upon casual observation, insight or intuition to frame a tentative, untested principle called a **hypothesis**. For example, they may conjecture, on the basis of 'armchair logic', that it is rational for consumers to buy more of a product when its price is low than when its price is high. The validity of this hypothesis must then be tested by the systematic and repeated examination of relevant facts. The deductive method goes from the general to the particular, from theory to facts.

Deduction and induction are complementary, rather than opposing, techniques of investigation. Hypotheses formulated by deduction provide guidelines for the economist in collecting and systematising empirical data. Conversely, some understanding of factual evidence—of the 'real world'—is a prerequisite for the formulation of meaningful hypotheses.

DESCRIPTIVE ECONOMICS

All sciences are empirical. All sciences are based upon facts, that is, upon observable and verifiable behaviour of certain data or subject matter. In the physical sciences, the factual data are inorganic. As a social science, economics is concerned with the behaviour of individuals, households, businesses, and institutions engaged in the production, exchange and consumption of goods and services.

Gathering facts can be an infinitely complex task. The world of reality is cluttered with a myriad of interrelated facts. So the economist must use discretion in collecting them. We must distinguish economic from non-economic facts, and then determine which economic facts are relevant and which are irrelevant to the particular problem under consideration. But even when this sorting process has been completed, the relevant economic facts may appear diverse and unrelated.

ECONOMIC THEORY

A conglomeration of facts is relatively useless; description is not enough. To be meaningful, facts must be systematically arranged, interpreted and generalised from. This is the task of economic theory or analysis. Principles and theories—the end result of economic analysis—bring order and meaning to a number of facts by tying these facts together, putting them in the correct relationship to one another, and generalising about them: 'Theories without facts may be barren, but facts without theories are meaningless.'[3]

Principles and theories are meaningful statements drawn from facts, but facts, in turn, serve as a constant check on the validity of principles already established. Facts—how individuals and institutions actually behave in producing, exchanging and consuming goods and services—change with time. This makes it essential that economists continually check existing principles and theories against the changing economic environment.

TERMINOLOGY OF ECONOMIC THEORY

Economists talk about 'laws', 'principles', 'theories' and 'models'. These terms all mean essentially the same thing: generalisations, or statements of regularity, concerning the economic behaviour of individuals and institutions. The term 'economic law' is a little misleading because it implies a high degree of exactness, universal application, and even moral 'rightness'. So, to a lesser degree, does the term 'principle'. And some people incorrectly associate the term 'theory' with ivory-tower dreams that are divorced from the facts and realities of the world. The term 'model', however, has much to commend it. A model is a simplified picture of reality, an abstract generalisation about how the relevant data actually behave.

In this book, the terms 'law', 'principle', 'theory' and 'model' are used synonymously. The specific term chosen to label any particular generalisation reflects custom or convenience. Thus, for example, the relationship between the price of a product and the quantity of the product consumers purchase is called the 'law' of demand, rather than the 'theory' or 'principle' of demand, because this is general practice.

There are several more points worth pursuing about the character of economic theory.

GENERALISATIONS

Economic *principles* are *generalisations* and, as the term implies, subject to exceptions and to quantitatively imprecise statement. Economic facts are usually diverse; some individuals and institutions act one way, and some another way. Hence, economic principles are frequently stated in terms of averages or statistical probabilities. For example, when economists say that the average household income was just over $34 200 in 1997–98, they are making a generalisation. It is recognised that some households earned much more and many others much less. Yet this generalisation, properly handled and interpreted, can be both meaningful and useful.

Sometimes an economist states a generalisation in terms of probabilities. For example, research may suggest that there is a 95 per cent probability that every $1000 of cuts in personal income tax will result in a $900 increase in consumer spending.

Business IMPLICATION MODELS



Models are not meant to be realistic. They are meant simply to enlighten us about aspects of a particular problem. These simple facts often confuse the novice in economics, one who is frequently looking for a full set of answers in a single framework. Umberto Eco provides a useful commentary on models, their purpose and limitations (Umberto Eco, *The Aesthetics of Thomas Aquinas*, Radius, USA, 1998, pp. x–xi):

> *... [A] system is a structural model which arrests reality for an instant and tries to make it intelligible. But this arrest, necessary for communication, impoverishes the real instead of enriching it. The model is of value only if it stimulates an advance to a new level of understanding of reality, a level on which it then seems inadequate.*

THE 'OTHER THINGS BEING EQUAL' ASSUMPTION

Like other scientists, economists regularly use the ***ceteris paribus***, or '**other things being equal**', **assumption** when making generalisations. That is, in order to simplify the process of analysis, economists assume that all variables, other than the one being considered, are constant.

For example, consider the relationship between the price of Vegemite and the amount of Vegemite purchased. It is helpful to assume that, of all the factors that might influence the amount of Vegemite purchased (including consumer incomes and tastes, the price of Vegemite, and the prices of other goods such as peanut butter), only the price of Vegemite varies. The economist is then able to focus on the relationship between the price of Vegemite and purchases of Vegemite without reasoning being blurred by the intrusion of other variables.

In the natural sciences, controlled experiments can usually be performed where 'all other variables' are held constant, or nearly so. Therefore, the assumed relationship between two variables can be tested with a high degree of precision. Economics, however, is not a laboratory science. The economist's method of empirical verification is based upon real-world data, or statistics, generated by the actual operation of the economy. In this rather bewildering environment, 'other things' do change. Despite the development of sophisticated statistical techniques designed to hold other things equal, such controls are less than perfect. As a result, economic principles are less certain and less precise than those of the laboratory sciences.

ABSTRACTIONS IN ECONOMICS

Economic principles or theories are, of necessity, abstractions. They do not encompass the full complexity of reality. The very process of sorting out non-economic and irrelevant facts in the fact-collecting process involves abstracting from reality. Unfortunately, the abstract nature of economic theory prompts the uninformed to identify it as something that is unrealistic and therefore of little practical use. This is nonsense! Economic theories are useful for the simple reason that they *are* abstractions. Reality is just too complex to allow meaningful analysis and interpretation of every detail. Economists theorise in order to give meaning to a maze of facts that would otherwise be confusing and useless, and to put facts into a more practical and useable form. Thus, to generalise is to abstract; generalisation for this purpose is practical, and therefore so is abstraction.

An economic theory is a model—a simplified picture or map—of some segment of the economy. This model enables us to understand reality better

because it avoids the details of reality. Theories—*good* theories—are grounded on facts and are therefore realistic. Theories that do not fit the facts are simply not good theories.

Business IMPLICATION — THE USE OF MODELS



Nobel Prize winner Fisher Black was a great fan of the use of models to develop insights and business strategies in the financial markets. He was aware of the ways in which to use these models, their limitations, and the need to keep things simple (Fisher Black, *Exploring General Equilibrium*, MIT Press, Cambridge, Mass., 1995, p. 4):

> *... Best of all, though, is to 'explore' a model. This means creating many specific examples of a general model, where each one explains a single stylised fact or perhaps a few features of the world. It means using some of these examples to elucidate microeconomic evidence. I don't think that we are ready to create a model with intermediate scope that explains in numerical detail many different kinds of evidence at once.*

MACROECONOMICS AND MICROECONOMICS

Macroeconomics: is concerned either with the economy as a whole or with the basic subdivisions or aggregates that make up the economy.

Aggregate: a collection of specific economic units that are treated *as if* they were one unit.

Microeconomics: is concerned with *specific* economic units and a *detailed* consideration of the behaviour of these individual units.

There are two essentially different levels of analysis at which the economist may derive laws concerning economic behaviour. The level of **macroeconomics** is concerned either with the economy as a whole or with the basic subdivisions or **aggregates**—such as the government, household and business sectors—which constitute the economy.

An **aggregate** is a collection of specific economic units that are treated as if they were one unit. Thus we might find it convenient to lump together the more than 7 million households in our economy and treat them as if they were one huge unit.

In dealing with aggregates, macroeconomics is concerned with obtaining an overview, or general outline, of the structure of the economy and the relationships among the major aggregates that constitute the economy. No attention is given to the specific units that make up the various aggregates. It is not surprising, then, to find that macroeconomics entails discussions of such magnitudes as total output, the total level of employment, total income, aggregate expenditures, the general level of prices, and so on, in analysing various economic problems. In short, macroeconomics examines the forest, not the trees. Put in another way, it gives us a bird's-eye view of the economy.

Microeconomics, on the other hand, is concerned with specific economic units and a detailed consideration of the behaviour of these individual units. When operating at this level of analysis, the economist figuratively puts an economic unit, or a very small segment of the economy, under the microscope to observe the details of its operation. Here we talk in terms of an individual industry, firm or household. Our analysis concentrates upon such magnitudes as the output or price of a specific product, the number of workers employed by a single firm, the revenue or income of a particular firm or household, the expenditures of a given firm or family, and so on. In microeconomics we examine the trees, not the forest. Put in another way, microeconomics is useful in achieving a worm's-eye view of very specific components of our economic system.

In practice, not every topic can easily be labelled as 'micro' or 'macro': many topics and subdivisions of economics cover both.

POLICY ECONOMICS: POSITIVE AND NORMATIVE

As we move from the fact and principles levels (boxes 1 and 2) of Figure 1.1 to the policy level (box 3), we make a critical leap from **positive** to **normative economics**.

Positive economics deals with facts (and theories about these facts), and avoids value judgements. Positive economics then attempts to set out scientific statements (or models or theories) about economic behaviour. Normative economics, in contrast, involves someone's value judgements about what the economy should be like or what particular policy action should be recommended, based on a given economic generalisation or relationship.

A common distinction is to say that positive economics concerns what is, while normative economics embodies subjective feelings about what ought to be. Positive economics deals with what the economy is actually like, whereas normative economics examines whether certain conditions or aspects of the economy are desirable or not.

Consider these examples. The following statement is positive: 'Unemployment is 8 per cent of the labour force' (factual statement). The following statement is normative: 'Unemployment ought to be reduced' (a desirable goal). The following statement is positive: 'Other things being the same, if student fees are increased, enrolment at Mega University will fall' (theory). The following statement is normative: 'Student fees should be lowered at Mega University so that more students can obtain an education' (goal). Whenever words such as 'ought to' or 'should' appear in a sentence, there is a strong chance that the statement is normative.

Much of the apparent disagreement among economists involves normative, value-based policy questions. It may be true that various economists present and support different theories or models of the economy and its component parts. But by far the biggest economic controversy reflects differing opinions or **value judgements** about what our society should be like. For example, there is greater agreement about what is the actual distribution of income in our society than about *how* income should be distributed. The point we re-emphasise is that value judgements or normative statements come into play at the level of policy economics.

ECONOMIC GOALS

It is important that we note a number of **economic goals** or values that are widely, though not universally, accepted in our own society and many others. They include:

1. *Economic growth*: The production and consumption of more and better goods and services, or, more simply stated, a higher standard of living, is desired.
2. *Full employment*: Suitable jobs should be available for all those who are willing and able to work.
3. *Economic efficiency*: We desire maximum benefits at minimum cost from the limited productive resources available.
4. *Price-level stability*: Sizeable upswings or downswings in the general price level, that is, inflation and deflation, should be avoided.
5. *Economic freedom*: Consumers, business managers and workers should enjoy a high degree of freedom in their economic activities.

6 *An equitable distribution of income*: No group of citizens should face stark poverty while others enjoy extreme luxury.

7 *Economic security*: Provision should be made for those who are chronically ill, disabled, handicapped, aged, or otherwise unable to earn sufficient incomes.

8 *External balance*: We seek a reasonable balance in our international trade and financial transactions.

This list of goals provides the basis for several significant points.

Interpretation

The above list of basic economic goals inevitably entails problems of interpretation. What are 'sizeable' changes in the price level? What is a 'high degree' of economic freedom? What is an 'equitable' distribution of income? Although most of us might accept these goals as generally stated, we might disagree very substantially on their specific meanings and, hence, the types of policies needed to attain these goals. It is worth noting that, although goals 1–4 and 8 are subject to reasonably accurate measurements, the inability to quantify goals 5–7 undoubtedly contributes to the controversy over their precise meaning.

Complementary goals

Some of these goals are complementary in that when one goal is achieved, some other goal or goals will also tend to be achieved. For example, achieving full employment (goal 2) means the elimination of unemployment, a basic cause of low incomes (goal 6) and economic insecurity (goal 7). Further, high levels of economic growth (goal 1) can help achieve more equal distribution of income (goal 6). This is particularly so if the growth favours low-income groups relative to high-income groups.

Conflicting goals

Many goals are conflicting, or mutually exclusive. They involve **trade-offs**, implying that to achieve one goal we must sacrifice another. For example, some economists argue that those forces that lead to economic growth and full employment may be the very same forces that cause inflation. In fact, the apparent conflict between goals 2 and 4 has been the focus of economic research. Goals 2 and 3 may also be in conflict. There are economists who have argued that attempts to achieve greater efficiency (goal 3) may mean substitution of capital for labour which, in the absence of other job opportunities, may lead to unemployment (contrary to goal 2).

Priorities

When basic goals do conflict, society is forced to develop a system of priorities for the objectives it seeks. To illustrate, if full employment and price stability are mutually exclusive to some extent (that is, if full employment involves some inflation, and price stability involves some unemployment), society must decide upon the relative importance of these two goals. There is obviously ample room for disagreement here. Society must, however, somehow confront the trade-offs and make decisions.

FORMULATING ECONOMIC POLICY

The creation of specific policies designed to achieve the broad economic goals of our society is no simple matter. A brief examination of the basic steps in policy formulation is useful.

1. *Stating goals*: The first step is to define our goals clearly. If we say that we want 'full employment', do we mean that everyone over 16 and under 65 years of age should have a job? Or do we mean that everyone who wants to work should have a job? Should we allow some 'normal' unemployment, caused by inevitable changes in the structure of industry and workers voluntarily changing jobs?

2. *Policy options*: Next we must state and recognise the possible effects of alternative policies designed to achieve the goal. This requires a clearcut understanding of the economic impact, benefits, costs and political feasibility of alternative programs. For example, economists may debate the relative merits and demerits of fiscal policy (which includes changing government spending and taxes) and monetary policy (which involves altering interest rates) as alternative means of achieving and maintaining full employment.

3. *Evaluation*: We are obligated to both our own and to future generations to review our experience with chosen policies and to evaluate their effectiveness. It is only through such evaluation that we can improve policy prescription. Did a given change in taxes or interest rates alter the level of employment to the extent predicted? Did deregulation of an industry (for example, banking) yield the predicted benefits to society? If not, why not?



Concept highlights

- The practice of economics usually combines three elements:
  - describing or gathering facts
  - developing principles or theories that make generalisations about economic behaviour
  - applying the insights from economic statistics and analysis in the form of policy prescription.
- Economic description and analysis are usually conducted at two levels:
  - macroeconomics is concerned with the behaviour of aggregates within the economy (for example, the average level of prices, or the total amount of unemployment)
  - microeconomics is concerned with the behaviour of specific units within the economy (for example, the market for wheat, or the price of housing in Noosa).
- Two approaches are taken by economists to develop economic theories:
  - the deductive approach, whereby testable hypotheses about economic behaviour are developed as part of a logical argument based on observation, insight or intuition
  - the inductive approach, whereby accumulated information is arranged and systematically analysed in order to derive generalisations regarding economic behaviour.
- Policy prescription requires:
  - a movement from positive economics (what *is*) to normative economics (what *ought* to be), and the recognition of the importance and impact of value judgements on policy choices
  - the statement of economic goals (for example, economic growth, full employment, economic efficiency, price-level stability, economic freedom, an equitable distribution of income, economic security and external balance)
  - recognition of the possible effects of alternative economic policies, their costs and benefits and the political feasibility of their implementation
  - an intent and willingness to conduct an evaluation of the effectiveness and consequences of the chosen economic policies.

PITFALLS TO OBJECTIVE THINKING

Our discussion of the economist's procedure has, up to this point, avoided some of the specific problems and pitfalls frequently encountered when we try to think objectively about economics. Consider the following impediments to valid economic reasoning.

BIAS

In contrast to a beginning physicist or chemist, the budding economist ordinarily brings into economics a bundle of biases and preconceptions about the field. For example, you might be suspicious of business profits, or feel that government deficits are invariably evil. However, such biases may cloud our thinking and interfere with objective analysis. The new student of economics must be willing to shed all biases and preconceptions that are simply not warranted by reference to fact.

LOADED TERMINOLOGY

The economic terminology to which we are exposed in newspapers and magazines is sometimes emotionally loaded. The writer—or, more frequently, the particular interest group he or she represents—may have a cause to further or an axe to grind, and terms will be slanted to solicit the support of the reader. Hence, we may find a government decision in favour of environmental controls called 'creeping socialism' by its opponents and 'intelligent democratic planning' by its proponents. We must be prepared, therefore, to discount such terminology in achieving objectivity in the understanding of important economic issues.

DEFINITIONS OF TERMS

Scientists are not obligated to use common or immediately recognisable definitions of their terms. Economists may find it convenient and essential to define terms in such a way that they are at odds with the definitions most people assume the terms to have in everyday speech.

However, as long as economists are explicit and consistent about definitions, they are on safe ground. For example, in everyday life, the term 'investment' may be associated with the buying of bonds and shares in the securities market. How often have we heard someone talking of 'investing' in mining shares or government bonds? But, to the economist, 'investment' means the purchase of real and tangible capital assets such as machinery and equipment, or the construction of a new factory building, not the purely financial transaction of swapping cash or part of a bank balance for a government bond or share certificate.

FALLACY OF COMPOSITION

Another pitfall in economic thinking is to assume, incorrectly, that what is true for the individual or part is necessarily also true for the group or whole. This is a logical **fallacy of composition**. The validity of a particular generalisation for an individual or part does not necessarily ensure its accuracy for the group or whole.

A non-economic example may help. You are watching a football match on a sunny autumn afternoon and the home team scores an outstanding goal. In the general excitement, you leap to your feet to get a better view. Generalisation: 'If you, an individual, stand, then your view of the game is improved.' But does this

also hold true for the group—for everyone watching the game? Certainly not! If everyone stands to watch the play, everyone—including you—will probably have the same view as, or even a worse view than, when seated!

Consider two examples from economics. A wage increase for Smith is desirable because, given product prices, it increases Smith's purchasing power and standard of living. But if everyone receives a wage increase, product prices may rise—that is, inflation may result. Therefore, Smith's standard of living may be unchanged (or even worse) as higher prices offset the increase in salary.

Now consider an individual farmer who is fortunate enough to grow and harvest a bumper crop. This farmer is likely to receive an annual income that is larger than usual. This is a correct generalisation at this level. But does it apply to farmers as a group? For other individual farmers, crop prices are not influenced (reduced) by this bumper crop. Each farmer is producing a negligible fraction of the total farm output. Farmers as a group, however, recognise that prices vary inversely with total output.[4] Thus, if all farmers produce bumper crops, the total output of farm products rises, and depresses prices. If price declines outweigh the unusually large output, farm incomes fall.

If we recall our earlier distinction between macroeconomics and microeconomics, we will be reminded by the fallacy of composition that generalisations that are valid at one of these levels of analysis may or may not be valid at another.

CAUSE AND EFFECT

POST-HOC FALLACY

We can often make mistakes about the nature of relationships and their causation. A common hazard in economic thinking is to assume that, simply because one event precedes another, the first is the cause of the second. This faulty reasoning is known as the ***post hoc, ergo propter hoc,*** or **'after this, therefore because of this', fallacy**. Post-hoc fallacy is a hazard in economic reasoning in which the assumption is made that simply because one event precedes another, the first event is the cause of the second.

A classic example clearly indicates the fallacy inherent in such reasoning. Suppose that early each spring the medicine man of a tribe performs his ritual by dancing around the town in a green costume. A week or so later the trees and grass turn green. Can we safely conclude that event A, the medicine man's gyrations, has caused event B, the landscape's turning green? Day follows night, but this doesn't mean that night is the cause of day!

CORRELATION VERSUS CAUSATION

It is especially important, in analysing various sets of empirical data, not to confuse **correlation** with **causation**. Correlation is a technical term that indicates that two sets of data are associated in some systematic and dependable way. For example, we may find that when X increases, Y also increases. However, an association between X–Y pairings does not necessarily mean that X is the cause of Y. A perceived X–Y relationship could be purely coincidental, or determined by some other fact, Z, not included in the analysis.

For example, economists have found a positive correlation between education and income. In general, people with more education earn higher incomes than do people with less education. Commonsense prompts us to label education as the cause and higher incomes as the effect; more education suggests a more productive worker, and such workers receive larger monetary rewards.

However, might not causation run the other way? Do people with higher incomes consume more education, just as they buy more entertainment and more steaks? Or is the relationship explicable in terms of still other factors? Are education and income positively correlated because the bundle of characteristics—such as ability, motivation, and personal habits—required to succeed in education are the same characteristics as those a person needs in order to become a productive and highly paid worker? Upon reflection, seemingly simple cause–effect relationships—such as 'more education results in more income'—may prove suspect or perhaps plain incorrect.

ECONOMIC QUACKERY

Here is a final general warning. The field of economics is, and always has been, a fertile ground for quacks and charlatans. Although few of us feel capable of offering aid and advice to the nuclear physicist or research chemist, a great many people envision themselves as unrecognised geniuses in economics. The world abounds with self-styled economists who stand ready to cure the world's ills with seemingly simple changes in the structure, legal framework or ideology underlying the operation of our economy.

We would be foolish to accept medical advice from a plumber or newsagent for the treatment of a serious disease. We ought to be equally hesitant to accept the economic analyses and remedies offered by untrained but highly vocal amateurs. Answers to major economic problems are rarely self-evident or clear-cut. If they were, the problems would have been solved long ago.

Concept highlights

Our ability to engage in valid economic reasoning faces a number of potential impediments:

- the biases and preconceptions that we bring to the study of economics, which may lead to a desire to see specified results emerge from our analysis, regardless of their validity
- a desire on the part of some individuals and organisations to use loaded terminology in outlining their case, which may impair the ability of some individuals to objectively analyse their arguments
- confusion or disagreement over the intended meaning of a term used in economics when this differs from the accepted meaning of that term as used in everyday speech
- the fallacy of composition, in which an outcome that holds for the individual is incorrectly assumed to hold for the group
- the post-hoc fallacy, in which the precedence in time of one event over another is mistakenly taken for evidence of a cause-and-effect relationship between variables or events
- confusing a correlation between economic variables or events with economic causation
- economic quackery.

THE ECONOMIC PERSPECTIVE

The methodology used by economists is common to many of the natural and social sciences, and all scholars try to avoid the reasoning errors just discussed. Thus, economists do not think in a special way, but they do view things from a special perspective.

The **economic perspective** includes several critical and closely interrelated features, including scarcity, rational behaviour and benefit–cost comparisons.

SCARCITY AND CHOICE

From our definition of economics, it is easy to see why economists view the world from the perspective of scarcity. Human and property resources are limited. It follows that outputs of goods and services must be scarce or limited, and scarcity limits our options and necessitates choice. We can't 'have it all', so what should we choose to have?

At the core of economics is the idea that 'there is no such thing as a free lunch'. Someone may treat you to lunch, making it 'free to you', but there is a cost to someone—ultimately to society. Scarce inputs of farm products, energy resources, the labour of chefs and others are required. These resources could have been used in alternative productive activities, and those activities—those other goods and services—are sacrificed in providing your lunch.

RATIONAL BEHAVIOUR

Economics is grounded on the assumption of 'rational self-interest'. Individuals make rational decisions to achieve the greatest satisfaction or maximum fulfilment of their goals. Thus consumers seek to spend their incomes rationally to get the greatest benefit or satisfaction from the goods and services their incomes allow them to buy.

Rational behaviour: behaviour that involves decisions and actions made by individuals in order to achieve the greatest satisfaction or maximum fulfilment of their goals.

Rational behaviour means that people will make different choices, because their circumstances (constraints), preferences and available information differ. You may have decided that it is in your own interest to attend a university before entering the labour force, but your high-school friend may have decided to forgo additional schooling and take a job. Why the different choices? Your academic abilities, as well as your family's income, may exceed those of your classmate. You may also be better informed. You realise that, on average, university-educated workers make much higher incomes and are less likely to be unemployed than workers with high-school educations. Thus you opt for university while your high-school friend, with fewer human and financial resources and less information, chooses a job. Both are rational choices, but based on differing constraints and information. Of course, rational decisions may change as circumstances change.

Rational self-interest is not the same as being selfish. For example, people may make personal sacrifices to help family members or friends, or contribute to charities, or contribute financially to their children's education because they derive satisfaction from making these choices.

MARGINALISM: BENEFITS AND COSTS

The economic perspective focuses largely on **marginal analysis**—decisions that compare marginal benefits and marginal costs. Marginal means 'extra', 'additional' or 'involving a change in'. Most economic choices or decisions entail changes in the status quo. When you completed high school, you faced the question of whether you should acquire additional education. Similarly, businesses are continually deciding whether to employ more or fewer workers or to produce more or less output.

In making such choices rationally, we must compare marginal benefits and marginal costs. For example, will the benefits of your higher education (including greater employment prospects, income, etc.) outweigh the time, effort and cost of obtaining a degree? Because of scarcity, any option or choice will entail both extra benefits and additional costs. For example, your time is scarce. What will you do with, say, two 'free' hours on a Saturday afternoon? *Option*: Watch football

on television? *Marginal benefit*: The pleasure of seeing the game. *Marginal cost*: Any of the other things you sacrifice by spending an extra two hours in front of the TV, including studying (economics, hopefully), rollerblading, or sleeping. If the marginal benefit exceeds the marginal cost, then it is rational to watch the game. But if you perceive the marginal cost of watching the game to exceed its marginal benefits, then you will probably choose one of the other options.

On the national level, government is continually making decisions involving marginal benefits and costs. More spending on the health system may mean less spending on assistance for the poor, or on military security. In a world of scarcity, the decision to obtain the marginal benefit with some specific choice includes the marginal cost of forgoing an alternative. Again, there's no free lunch.

One implication of decisions based on marginal analysis is that there can be too much of a 'good thing'. Although certain goods and services seem inherently desirable—education, health care, a clean environment—we can in fact have too much of them. 'Too much' occurs when we push their production to some point where their marginal cost (the value of the forgone options) exceeds their marginal benefit. If we choose to produce education to the extent that its marginal cost exceeds its marginal benefit, we are providing 'too much' education, even though education is a 'good thing'. If the marginal cost of education is greater than its marginal benefit, then we are sacrificing alternative products (for example, health care and pollution reduction) which may be more valuable than education at the margin.

Concept highlights

The economic perspective involves:

- the recognition that, for society as a whole, resources are scarce or limited, requiring society to accept limits to its ability to produce goods and services, and necessitating that choices be made between the production of one alternative over another
- an assumption that individuals operate on the basis of rational self-interest, meaning that they make decisions that provide them with the greatest benefits given their limited resources
- marginal analysis, whereby the incremental benefits available from any change to the status quo are compared to the incremental costs of making the change, suggesting that only those choices where marginal benefit exceeds marginal cost be accepted.

SUMMARY

1 Economics deals with the study of each society's attempts to maximise the satisfaction that it derives from the use of its limited (scarce) resources in the production of goods and services. It is thus also a study of the effectiveness of the design and efficiency of operation of the economic system that each society utilises as it attempts to satisfy its unlimited wants from limited resources.

2 Economics is studied for several fundamental reasons. It provides valuable knowledge about our social environment, and about economic behaviour within this environment. It equips people in a democracy for making fundamental decisions, such as the election of representatives, more

intelligently. Although not chiefly a vocational discipline, economics may provide businesses and consumers with valuable information and a set of methods for analysing this information.

3 The task of descriptive or empirical economics is: to distinguish economic from non-economic facts; to gather those economic facts that are relevant to a particular problem or specific segment of the economy; and to test hypotheses against facts to validate theories.

4 Generalisations made by economists about the economic behaviour of individuals or groups within the economic system are called 'principles', 'theories' or 'models'. The derivation of these principles is the task of economic theory.

5 The development of economic theory by the process of induction distils theories from facts, moving from the specific to the general. A deductive approach to the development of economic theory requires the statement of a hypothesis about economic behaviour and then the empirical assessment of the theory against facts to determine whether the hypothesis is supported.

6 Some economic principles deal with macroeconomics, that is, the economy as a whole, or the major economic aggregates within the economy. Examples of these aggregates include the level of national output of goods and services, the total level of employment of economic resources such as labour, or the average level of the prices of the goods and services produced by the society. Other economic principles deal with microeconomics, which focuses on specific economic units or institutions. Examples of these individual economic units and institutions include the market for wool, the domestic banking system, and the production decisions of a single automobile producer.

7 Economic principles are often valuable as predictive devices. This is because they make it possible to develop estimates of the likely response of sectors of the economy, or economic units within the economy, to changes in the economic environment. Economic principles also provide the basis for the formulation of the economic policies that are designed to solve economic and social problems and to control or influence the economic outcomes from undesirable events.

8 Positive statements deal with facts ('what is'), whereas normative statements include value judgements ('what ought to be'). Descriptive economics and economic theory are intended as the bases for the development of positive economic statements. Policy prescription is associated with the development of normative economic statements.

9 Economic growth, full employment, economic efficiency, price-level stability, economic freedom, equity in the distribution of income, economic security and a reasonable external balance are all widely accepted economic goals in our society. Some of these goals are complementary, such as economic growth and attaining full employment; others, such as full employment and price-level stability, are usually accepted as being mutually exclusive.

10 In studying economics, the beginner may encounter numerous pitfalls. Some of these are: the beginner's own biases and preconceptions; a tendency amongst some parties to use emotionally loaded terminology to gain acceptance for their arguments; difficulties with economic terminology; the fallacy of composition whereby it is accepted that what holds for the

individual will hold for the group as a whole; the difficulty of establishing clear cause-and-effect relationships between components of the economic system (the *post hoc, ergo propter hoc* fallacy, and a confusion of correlation with causation); and the ever-present threat of economic quackery.

11 The economic perspective imagines that individuals and institutions make rational decisions based on a careful comparison of the marginal costs of an incremental change relative to its marginal benefits.

KEY TERMS *and* CONCEPTS *to remember*

aggregate(s)	9	hypothesis	6
ceteris paribus or 'other things being equal' assumption	8	inductive method	6
correlation and causation	14	macroeconomics	9
deductive or hypothetical method	6	marginal analysis	16
descriptive or empirical economics	5	microeconomics	9
economic goals	10	policy economics	5
economic perspective	15	positive and normative economics	10
economic system	3	*post hoc, ergo propter hoc* or 'after this, therefore because of this' fallacy	14
economic theory	5	rational behaviour	16
economics	3	trade-offs	11
fallacy of composition	13	value judgements	10
generalisation or principle	6		

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 Explain in detail the interrelationships between economic facts, theory and policy. Use flow-charts or diagrams where appropriate.

2 Critically evaluate the following statement: 'The trouble with economics is that it is not practical. It has too much to say about theory and not enough to say about the facts.'

3 Analyse and discuss the meaning and implications of the following quotation:

> *Facts are seldom simple and usually complicated; theoretical analysis is needed to unravel the complications and interpret the facts before we can understand them … the opposition of facts and theory is a false one; the true relationship is complementary. We cannot in practice consider a fact without relating it to other facts, and the relation is a theory. Facts by themselves are dumb. Before facts will tell us anything, we have to arrange them, and the arrangement is a theory. Theory is simply the unavoidable arrangement and interpretation of facts, which gives us generalisations on which we can argue and act, in the place of a mass of disjointed particulars.*[5]

4 Of what significance is it that economics is not a laboratory science? Given an inability to experiment, what problems may be involved in deriving and applying economic principles?

5 Explain what is meant in this quote: 'Like all scientific laws, economic laws are established in order to make a successful prediction of the outcome of human actions.'[6]

6 'Abstraction ... is the inevitable price of generality ... indeed abstraction and generality are virtually synonyms.'[7] Explain what this statement means for the development of economic theory and its ability to predict the impact of changes to the structure or institutions of our economic system.

7 Why are cause-and-effect relationships difficult to isolate in the social sciences?



1 To what extent would you accept the eight economic goals stated and described in this chapter? What priorities would you assign to them?

2 It has been said that we simply seek four goals: progress, stability, justice and freedom. Is this list of goals compatible with the list of goals given in this chapter?

3 Analyse each of the following specific goals in terms of the eight general goals given in this chapter, noting points of conflict and compatibility:
- reducing environmental pollution
- increasing leisure
- protecting producers from foreign competition.

Indicate which of these specific goals you favour and justify your position.

4 Review and critically evaluate your answers to question 3. Do you believe that any of your answers are influenced by your own biases and preconceptions?

5 Explain and give an illustration of each of:
- the fallacy of composition
- the *post hoc, ergo propter hoc* or 'after this, therefore because of this' fallacy.

6 Use marginal analysis to explain why you may choose to go to the movies tonight rather than buy another economics textbook.



1 To gain insight into the issues in economics that have been considered important over the last two decades, locate and visit the website for the Nobel Prize in Economics. You will find this at
http://www.nobel.se/
Read about the prize, its importance and its rationale.

2 List the name(s) of the winner(s) of the Nobel Prize in Economics in each of the last 10 years.

3 For what research and applications in economics has the Nobel Prize in Economics been awarded over the last decade? Do you agree that these prize-winning ideas/areas are important and have made significant contributions to humanity?

NOTES

1 John Maynard Keynes, *The General Theory of Employment, Interest and Money*, The Macmillan Company, New York, 1936, ch. 24.

2 A number of authors have produced introductions to the fascinating historical development of economic ideas. Excellent examples of this type of text are: Robert Heilbroner, *The Worldly Philosophers*, 6th edn, Simon and Schuster, Inc., New York, 1986; and Daniel R. Fusfeld, *The Age of the Economist*, 6th edn, Scott, Foresman and Company, Chicago, 1990.

3 Kenneth E. Boulding, *Economic Analysis: Microeconomics*, 4th edn, Harper & Row, Publishers, Inc., New York, 1966, p. 5.

4 This assumes that there are no government programs that fix farm prices.

5 Henry Clay, *Economics for the General Reader*, The Macmillan Company, New York, 1925, p. 10.

6 Oskar Lange, 'The Scope and Method of Economics', *Review of Economic Studies*, vol. 13, 1945, p. 20.

7 George J. Stigler, *The Theory of Price*, The Macmillan Company, New York, 1947, p. 10.

A LAST WORD ECONOMISTS AS GURUS

Most managers do not think economics has much to offer them. They should take a closer look.

Is it any wonder that businessmen cannot stand economists? The typical manager never seems to face the same problem twice, always says exactly what he means, expletives included, and is certain that the people he deals with are not even remotely rational. He could not have less in common with the typical economist, who is always searching for universal solutions, cannot articulate them even when he finds them, and bases his entire view of the world on the principle that people are rational to a fault. When economists are called upon by businessmen, therefore, it is rarely to provide any kind of legitimate advice about strategy. Instead, firms tend to look to economists either as fortune-tellers, predicting whether demand for their products will rise or fall, or as hired guns in the courts, helping to fend off product-liability suits or antitrust rulings ...

[McKinsey management] consultant, Eric Beinhocker, takes a pot-shot at what he refers to as 'fishbowl economics'—the economist's tendency to treat every industry as though it were heading towards a tidy equilibrium, just as a ball rolling in a fishbowl must eventually settle at the bottom. This assumption, he argues, is squarely at odds with the real world, which is always changing, leaving the economists and their pet theories behind ... But is he right? Arguably consultancies, with their glib (albeit popular) maxims, are often much worse advisers for this increasingly complex, contradictory world than economists. Unlike consultants, who tend to dream up a theory and then search for a few examples which 'prove' it, a trained economist can hardly even think up a new theory without musing, in almost the very next breath, about where one would look for evidence that contradicts it. That does not always make economists easy to follow; but, in a world where unforeseen obstacles abound, this rigour can be useful ... Economics can be just as effective in the executive suite as it is on the factory floor or in the personnel department.

Michael Porter dominated much of the writing on strategy in the 1980s. Now two other economists at the Harvard Business School, David Collis and Cynthia Montgomery ... argue that firms need to do three things: make products that people want at profitable margins; develop special skills that competitors find hard to replicate; and build a system in which they can do both these things without

becoming too dependent on those highly skilled employees, lest the latter leave. As a conclusion, this is not particularly original. What is more notable is the systematic way in which the two economists show how firms can integrate these three objectives into their business strategy, and then link that strategy to their organisational structure ... Despite these many advantages, however, the dismal science's pessimistic nature can also be a severe handicap. Most successful firms become that way because at some point in their troubled evolution they simply refuse to quit, and press on against the odds. Unfortunately, many unsuccessful firms share this very trait. One of the hardest tasks facing managers, therefore, is rating their chances accurately. And most economists, if left to their own devices, would be far too prone to give up (or, in their parlance, 'make tradeoffs'). Fortunately, however, nobody has yet suggested that economists actually be allowed to manage anything.

SOURCE: Economist, *14 June 1997, p. 77.*

Questions

1 What is economics concerned with? Might this lead to the type of conflicts suggested in the article between what is expected of economists in business and what they are able to deliver to business?

2 'Although not primarily a business discipline, the methods of economics may provide information of value to those businesspeople that care to utilise them, and may assist in the decision making process.'

Discuss the validity of this proposition, making reference to the methodology of economics, and to the distinction between positive and normative economics.

3 What benefits and principles might the economic perspective bring to businesses? Might these perspectives prove unpopular—coming from the 'dismal science'—as is suggested in the article? Suggest why this may be so.

4 Should we expect economics to provide all the answers to business problems? Why or why not?

APPENDIX *to* CHAPTER 1



GRAPHS AND THEIR MEANING

This Appendix is intended to provide you with a basic introduction to graphs and various graphical concepts commonly used in economics. If you are already comfortable with these devices, move on to Chapter 2. For those readers less familiar with the use of graphs, a sound acquaintance with this appendix is essential for an understanding of much of the remainder of this textbook.

If you glance quickly through the book, you will find many graphs. Some appear to be simple, while others may seem more formidable. Contrary to folklore, graphs are not designed by economists to confuse students! Graphs can help students visualise and understand important economic relationships.

The physicist and chemist sometimes illustrate their theories by building arrangements of multicoloured spheres representing protons, neutrons, and so on, held in the proper relation to one another by wires or sticks. In the same way, economists often use graphs to illustrate their theories or models, and by understanding these 'pictures' you can more readily comprehend what the economists are saying.

Many of our principles or models in this book explain the relationship between just two sets of economic facts; therefore, two-dimensional graphs are a convenient way of visualising and manipulating these relationships.

CONSTRUCTING A GRAPH

A graph is a visual representation of the relationship between two variables. Table A1.1 is a hypothetical illustration showing the relationship between income and consumption. Without ever having studied economics, we would expect intuitively that high-income earners would consume more goods and services than low-income earners. So we are not surprised to find in Table A1.1 that consumption increases as income increases.

Table A1.1 The relationship between income and consumption

Income ($ per week)	Consumption ($ per week)	Point
0	+50	*a*
100	100	*b*
200	150	*c*
300	200	*d*
400	250	*e*

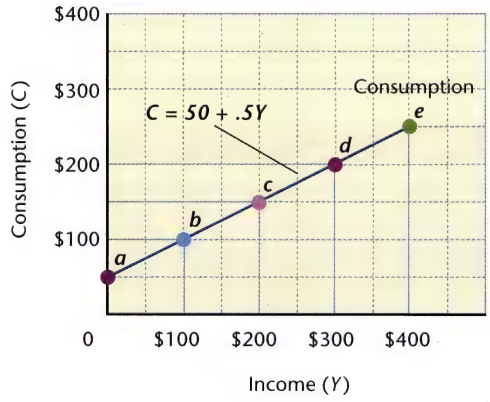


FIGURE A1.1
Graphing the direct relationship between consumption and income

Two sets of data which are positively or directly related, such as consumption and income, graph as an up-sloping line. In this case the vertical intercept is 50 and the slope of the line is +0.5.

How can the information in Table A1.1 be expressed graphically? Glance at the graph shown in Figure A1.1. Now look back at the information in the table, and we will explain how to represent that information in a useful way by constructing the graph you just examined.

What we want to show visually, or graphically, is how consumption changes as income changes. Since income is the determining factor, we represent it on the horizontal axis of the graph, which is the usual practice. And, because consumption depends on income, we represent it on the vertical axis of the graph, as is also usual. Actually, what we are doing is representing the *independent* variable on the **horizontal axis** and the *dependent* variable on the **vertical axis**.

Now we must arrange the vertical and horizontal scales of the graph to reflect the range of values of consumption and income, as well as marking the steps in convenient graphic increments. As you can see, the ranges in the graph cover the ranges of values in Table A1.1. The increments on both scales are $100 for approximately each centimetre.

Next, we must locate, for each consumption value and the income value that it depends upon, a single point that reflects the same information graphically. Our five income–consumption combinations are plotted by drawing perpendiculars (lines at a 90-degree angle) from the appropriate points on the vertical and horizontal axes. For example, in plotting point *c*, the $200 income, $150 consumption point, perpendiculars must be drawn up from the horizontal (income) axis at $200 and across from the vertical (consumption) axis at $150. These perpendiculars intersect at point *c*, which locates this particular income–consumption combination. You should verify that the other

income–consumption combinations shown in Table A1.1 are properly located in Figure A1.1. By assuming that the same general relationship between income and consumption prevails at all other points between the five points graphed, a line or curve can be drawn to connect these points.

Using Figure A1.1 as a benchmark, we can now make several additional important comments.

DIRECT AND INVERSE RELATIONSHIPS

Direct relationship: where the values of two related variables change in the same direction.

Our up-sloping line depicts a direct relationship between income and consumption. By a positive or **direct relationship**, we mean that the two variables—in this case consumption and income—change in the *same* direction. An increase in consumption is associated with an increase in income; conversely, a decrease in consumption is associated with a decrease in income. When two sets of data are positively or directly related, the graph of the data will always have an up-sloping line, as in Figure A1.1.

Inverse relationship: where the values of two related variables move in opposite directions.

In contrast, two sets of data may be inversely related. Consider Table A1.2, which shows the relationship between the price of football tickets and attendance at YFC (Your Favourite Club). We observe a *negative* or **inverse relationship** between ticket prices and attendance: these two variables change in *opposite* directions. When ticket prices decrease, attendance increases. Conversely, when ticket prices increase, attendance decreases. In Figure A1.2, the six data points of Table A1.2 are plotted following the same procedure outlined above. Observe that an inverse relationship will always graph as a down-sloping line.

Table A1.2 The relationship between ticket prices and attendance

Ticket price ($)	Attendance (thousands)	Point
25	0	*a*
20	4	*b*
15	8	*c*
10	12	*d*
5	16	*e*
0	20	*f*

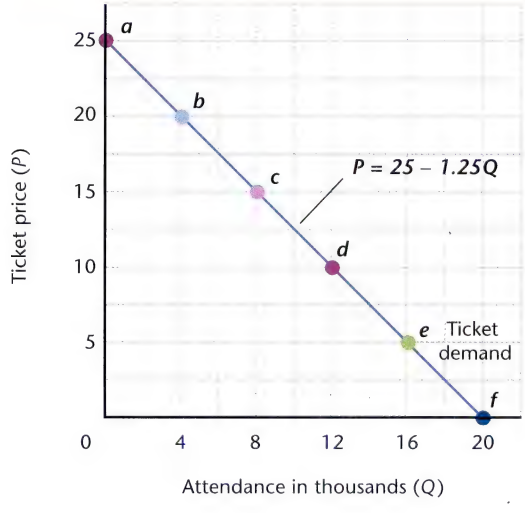


FIGURE A1.2
Graphing the inverse relationship between ticket prices and game attendance

Two sets of data which are negatively or inversely related, such as ticket price and the attendance at football games, graph as a down-sloping line. The slope of this line is −1.25.

DEPENDENT AND INDEPENDENT VARIABLES

Dependent variable: variable which changes as a consequence of a change in some other (independent) variable; the 'effect' or outcome.

Independent variable: variable which causes a change in some other (dependent) variable.

Although the task is sometimes formidable, economists seek to determine which variable is 'cause' and which 'effect'. Or, more formally, we want to ascertain which is the independent and which is the dependent variable. By definition, the **dependent variable** is the 'effect', or outcome; it is the variable that changes because of a change in another (the independent) variable.

Similarly, the **independent variable** is the 'cause'; it is the variable that causes the change in the dependent variable. As we noted earlier in our income–consumption example, generally income is the independent variable and consumption the dependent variable. Income causes consumption to be what it is, rather than the other way around. Similarly, ticket prices determine attendance at YFC football games; attendance does not determine ticket prices. Ticket price is the independent variable and the quantity purchased is the dependent variable.

You may recall from previous study that mathematicians always put the independent variable (cause) on the horizontal axis and the dependent variable (effect) on the vertical axis. Economists are less tidy: their graphing of independent and dependent variables is more arbitrary. While their conventional graphing of the income–consumption relationship is consistent with mathematical presentation, economists put price and cost data on the vertical axis. Thus, the economist's graphing of YFC's ticket price – attendance data conflicts with normal mathematical procedure.

OTHER VARIABLES HELD CONSTANT

Our simple two-variable graphs ignore many other factors that might affect consumption at each income level or the number of people attending football games at each possible ticket price. When economists plot the relationship between any two variables, they invoke the *ceteris paribus* or 'other things being equal' assumption discussed previously. Thus, in Figure A1.1, all other factors (that is, all factors other than income) that might affect the amount of consumption are presumed to be constant or unchanged. Similarly, in Figure A1.2, all factors other than ticket price that might influence attendance at YFC's football games are assumed to be constant. In reality, we know that 'other things' often change, and, when they do, the specific relationships presented in our two tables and graphs will change. Specifically, we would expect the plotted lines to shift to new locations.

For example, what might happen to the income–consumption relationship if a stock market 'crash' occurred? The expected impact of this dramatic fall in the value of stocks and shares would be to make people feel less wealthy and therefore less willing to consume at *every* income level. We would anticipate a downward shift of the consumption line in Figure A1.1. (You should plot a new consumption line, assuming that consumption is, say, $20 less at each income level. Note that the relationship remains direct, but the line has merely shifted to reflect less consumer spending at each level of income.)

Similarly, factors other than ticket prices might affect YFC game attendance; for example, a general recession that leads to lower incomes in the community. You should redraw the relevant figure, assuming that 2000 fewer people attend at each and every possible price.

SLOPE OF A LINE

Lines can be described in terms of their slopes. The **slope of a straight line** between any two points is defined as the ratio of the vertical change (the rise or fall) to the corresponding horizontal change involved in moving between those points.

POSITIVE SLOPE

In moving from point b to point c in Figure A1.1, the rise or vertical change (the corresponding change in consumption) is +$50 and the horizontal change (the change in income) is +$100. Therefore:

$$\text{Slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{+50}{+100} = +0.5$$

Note that the slope of 0.5 is positive because consumption and income change in the same direction; that is, consumption and income are directly or positively related.

This slope of +0.5 tells us that there will be a $1 increase in consumption for every $2 increase in income. Similarly, it indicates that for every $2 decrease in income there will be a $1 decrease in consumption.

NEGATIVE SLOPE

For our ticket price – attendance data, the relationship is negative or inverse, with the result that the slope of the line in Figure A1.2 is negative. In particular, a vertical change or fall of 5 units is associated with a horizontal change of 4 units. Therefore:

$$\text{Slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{-5}{+4} = -1.25$$

This slope of $\frac{-5}{+4}$ or −1.25 means that lowering the price of a ticket by $5 will increase attendance by 4000 people. Or, alternatively stated, it implies that a $1 price reduction will increase attendance by 800 persons.

THREE ADDENDA

Our discussion of the slope of a line needs three additional comments.

1. *Measurement units*: The slope of a line will be affected by the choice of units for either variable. If, in our ticket price illustration, we had chosen to measure prices in cents rather than dollars, our vertical change for a price cut would be −500 (cents) instead of −5 (dollars) and the slope would be −125 (= −500 ÷ 4) rather than −1.25. The measurement of slope thus depends on the units used.

2. *Marginal analysis*: As we saw in Chapter 1, economics is largely concerned with marginal or incremental changes from the status quo. This is relevant because the slopes of lines measure marginal changes. For example, in Figure A1.1, the slope shows that $50 of extra or marginal consumption is associated with each $100 increase in income. Consumers as a group will spend half of any increase in their income and reduce their consumption by half of any decline in income. The concept of slope is important in economics because it reflects marginal changes.

3 *Infinite and zero slopes*: Many variables are unrelated or independent of one another. We would not expect the price of bananas to be related to the number of mobile phones purchased. If we graph the price of bananas on the vertical axis and the number of mobiles purchased on the horizontal axis, the absence of a relationship between them would be indicated by a line parallel to the vertical axis: this line reflects that fact that changes in the price of bananas have no impact on mobile phones purchases. The slope of such a line is infinite. Similarly, if aggregate consumption was completely unrelated to, say, rainfall and we graph consumption on the vertical axis and rainfall on the horizontal axis, this unrelatedness would be indicated by a line parallel to the horizontal axis. This line has a slope of *zero*.

INTERCEPT

In addition to its slope, the other information needed to locate a line is the **vertical intercept**. By definition, this is the point at which the line meets the vertical axis. For Figure A1.1, the intercept is \$50. This means that, if current income were somehow zero, consumers would still spend \$50. How might they manage to consume when they have no current income? Two possible answers are that they could borrow money or sell off some of their assets. The vertical intercept in Figure A1.2 shows us that, if the ticket price were \$25, YFC's football team would be playing in an empty stadium.

EQUATION FORM

Given the intercept and the slope, our consumption line can be succinctly described in equation form. In general, a *linear equation* is written in the form

$$y = a + bx$$

where y is the dependent variable
a is the vertical intercept
b is the slope of the line
x is the independent variable.

For our income–consumption example, if C represents consumption (the dependent variable) and Y represents income (the independent variable), we can write the equation of the line as $C = a + bY$. By substituting the actual values of the intercept and the slope, we obtain the equation $C = 50 + 0.5Y$. This equation allows us to determine consumption at *any* level of income. At the \$300 income level (point d in Figure A1.1), our equation predicts that consumption will be \$200 (i.e. \$50 + 0.5 × \$300). You should confirm that at the \$250 income level consumption will be \$175.

When economists reverse mathematical convention by graphing the independent variable on the vertical axis and the dependent variable on the horizontal axis, the standard linear equation solves for the independent, rather than the dependent, variable. We noted earlier that this case is relevant for our YFC ticket price – attendance data. If P represents the ticket price and Q represents attendance, our relevant equation is $P = 25 - 1.25Q$, where the vertical intercept is 25 and the (negative) slope is −1.25. But knowing the value of P lets us solve Q, which is actually our dependent variable. For example, if $P = 15$, then the values in our equation become: $15 = 25 - 1.25(Q)$, or $1.25Q = 10$, or $Q = 8$. You should check this answer against Figure A1.2, and also use this equation to predict YFC ticket sales when the ticket price is \$7.50.

SLOPE OF A NON-LINEAR RELATIONSHIP OR CURVE

We now move from the relatively simple world of linear relationships (straight lines) to the slightly more complex world of non-linear relationships (curves). By definition, the slope of a straight line is constant throughout. In contrast, the slope of a curve changes as we move from one point to another on the curve.

For example, consider the up-sloping curve *AA* in the left-hand part of Figure A1.3. Although its slope is positive throughout, it diminishes or flattens as we move towards the upper right of the graph. Given that the slope is constantly changing, we can measure the slope only at some particular point on the curve.

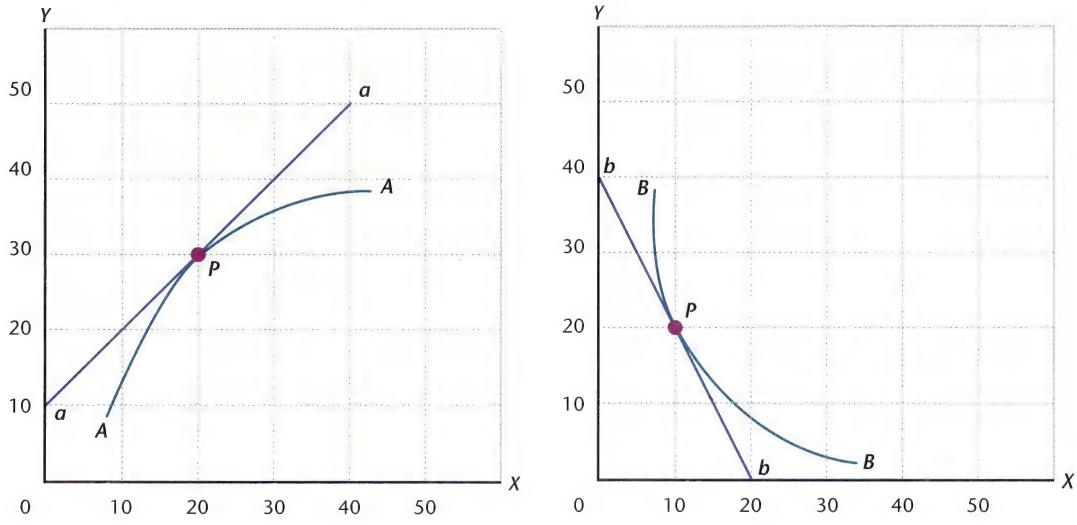


FIGURE A1.3
Determining the slopes of curves

The slope of a curve changes as we move from point to point on the curve. The slope at any point can be determined by drawing a straight-line tangent to that point and calculating the slope of that straight line.

We begin by drawing a straight line that is **tangent** to, or *just touches*, the curve at that point where we want to measure its slope. By definition, a line is tangent at that point where it touches, but does not intersect, the curve. Thus, line *aa* is tangent to curve *AA* at point *P* in Figure A1.3. Having drawn the tangent, we can measure the slope of *AA* at point *P* by measuring the slope of the tangent at *aa*. Specifically, in Figure A1.3, when the vertical change (rise) in *aa* is +10, the horizontal change (run) is also +10. Thus, the slope of the tangent *aa* is 10/10 or +1, and therefore the slope of *AA* at *P* is also +1. Notice that the slope will vary as we move around the curve (try measuring slopes at other points). Notice also that the slope is always positive.

Now consider the down-sloping curve *BB* in the right-hand part of Figure A1.3. In this case, the slope of *BB* is negative and diminishes as we move towards the lower right along the curve. What is the slope at point *P*? Again, we draw a line *bb* that is tangent to curve *BB* at *P*. Here, when the vertical change (fall) in *bb* is −10, the horizontal change is only +5. Thus, the slope of *BB* at point *P* is $\frac{-10}{+5}$, or −2. See Question 6 in 'Problems & exercises' below.

SUMMARY

1. Graphs are a convenient and frequently revealing means of illustrating economic relationships or presenting economic principles.
2. Two variables are positively or directly related when their values change in the same direction (that is, the sign (+ or −) of the change in each variable is the same). Two variables that are directly related will have their joint (paired) observations plot as an up-sloping line on a graph.
3. Two variables are negatively or inversely related when their values change in opposite directions (that is, the sign of the change in one variable is the opposite of that of the other). Two variables that are inversely related will have their paired observations graph as a down-sloping line.
4. The value of the dependent variable (the 'effect') is determined by the value of the independent variable (the 'cause').
5. When 'other factors' that might affect a two-variable relationship are allowed to change, the plotted relationship is likely to shift to a new location on the two-dimensional graph.
6. The slope of a straight line is the ratio of the vertical change to the horizontal change that occurs when moving between any two points in the graph. The slope of an up-sloping line is positive, while that of a down-sloping line is negative.
7. The slope of a line depends on the choice of measurement units for denominating the variables. It is especially relevant in economics because it measures marginal changes.
8. The slope of a horizontal line is zero; the slope of a vertical line is infinite.
9. The vertical (or horizontal) intercept and the slope of a line establish its location and are used in expressing the relationship between two variables as a linear equation of the form $y = a + bx$.
10. The slope of a curve at any point is determined by calculating the slope of a straight line that is drawn as a tangent to that point.

KEY TERMS *and* CONCEPTS *to remember*

dependent and independent variables 25
direct and inverse relationships 24
slope of a straight line 25
tangent 28
vertical and horizontal axes 23
vertical intercept 27

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 Briefly explain the use of graphs as a means of presenting economic principles.

2 What is an inverse relationship? Show how it is graphed.

3 What is a direct relationship? Show how it is graphed.

4 Briefly explain how we measure the slope of a straight line.

5 Explain how can we measure the slope of a curved line.

Problems & exercises

1 Graph and explain the relationships we would expect to find between:

(a) the number of centimetres of rainfall per month and the sale of umbrellas

(b) the amount of HECS and other student fees paid by students and the level of enrolment at universities across Australia

(c) the size of a university's scholarships and the number of contests won by its debating team.

In each case, give examples of considerations other than those specifically mentioned and explain how they might upset the expected relationship. Is your generalisation in (b) consistent with the fact that, historically, enrolments and fees have both increased? If not, explain any difference.

2 Indicate how each of the following might affect the data shown in Table A1.2 and Figure A1.2:

(a) YFC's coach schedules tougher opponents

(b) YFC contracts to have all its home games televised.

3 The table below contains data on the relationship between saving and income.

(a) Rearrange the data as required and plot on the graph on the next page.

(b) What is the slope of the line?

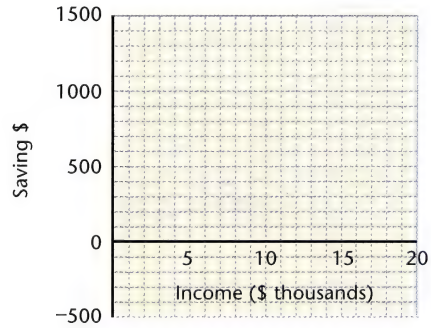
(c) What is the vertical intercept of the line?

(d) Interpret the meaning of both the slope and the intercept of the line.

(e) Write the linear equation that represents this line.

(f) What would you predict saving to be at the $12 500 level of income?

Income ($ per year)	Saving ($ per year)
15 000	1 000
0	−500
10 000	500
5 000	0
20 000	1 500



4 Suppose that when the interest rate that must be paid to borrow funds is 16 per cent, businesses find it unprofitable to invest in machinery and equipment. However, when the interest rate is 14 per cent, $5 billion worth of investment is profitable. At 12 per cent, a total of $10 billion of investment is profitable. Similarly, total investment increases by $5 billion for each successive 2 per cent decline in the interest rate.

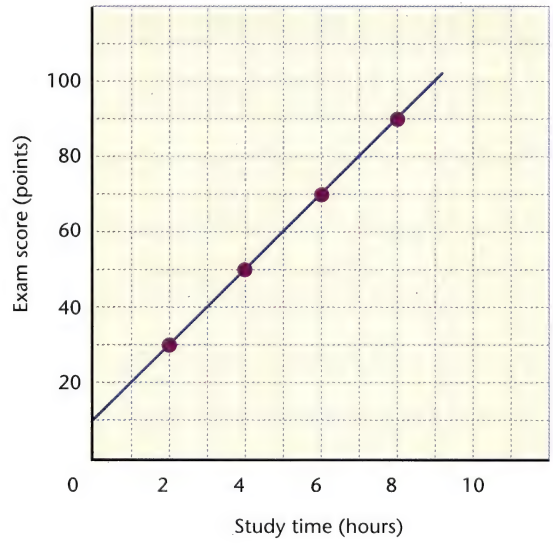
Indicate the relevant relationship between the interest rate and investment verbally, in a table, graphically, and as an equation. Graph the interest rate on the vertical axis and investment on the horizontal axis. In your equation use the form

$$i = a - bl$$

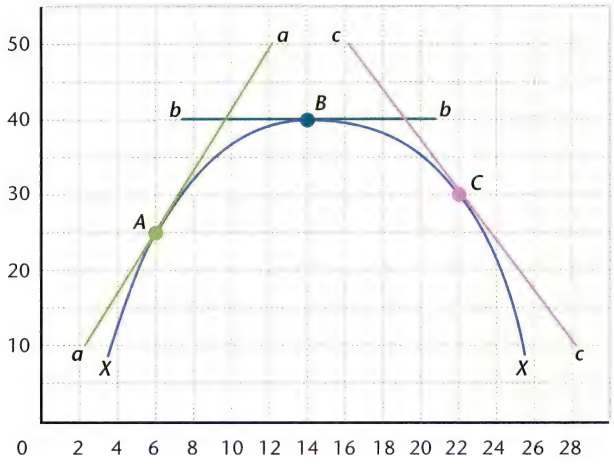
where i is the interest rate
a is the vertical intercept
b is the slope of the line
l is the level of investment.

Comment on the advantages and disadvantages of the verbal, tabular, graphical and equation forms of presentation.

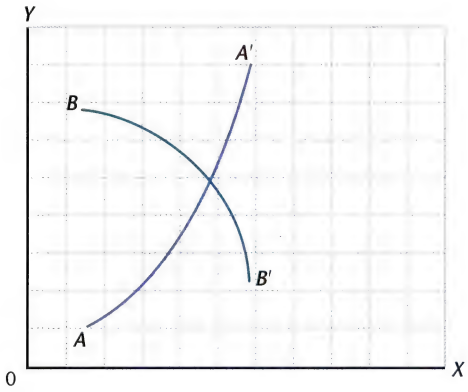
5 Construct a table from the data presented in the graph below. Which is the dependent and which the independent variable? Summarise the data in equation form.



6 The diagram below shows curve XX and three tangents at points A, B, and C. Calculate the slope of the curve at these three points.



7 In the figure below, is the slope of curve AA' positive or negative? Does the slope increase or decrease as we move from A to A'? Answer the same two questions for curve BB'.





Chapter 2 THE ECONOMISING PROBLEM

INTRODUCTION

Chapter 2 plays an important role in your education in economics and the economic way of thinking. Here we introduce you to some of the fundamentals of economic science and explore the implications of these fundamentals with you. As we do so, we will build upon your understanding of the economic perspective of Chapter 1 in several stages. First, we introduce you to the facts that underlie the economising problem. Next we introduce several of the cornerstones of economic analysis and the economic way of thinking. These concepts are specialisation, opportunity cost and comparative advantage. The use of these concepts is central to the economic organisation and function of Australia and many other industrially advanced nations, as well as providing one of the bases for trade between nations.

Industrially advanced economies have some further features in common. These include the use of money as a medium of exchange, and a reliance on markets and prices to coordinate at least some proportion of their economy's production and consumption activity. This prompts our discussion of these features at this point in the textbook, providing some important background material for the study of markets in Chapter 3.

After we have discussed some of the features that are common to industrially advanced nations, we provide you with a brief but important examination of the 'isms'. The 'isms' are the characteristics of the alternative economic systems used to solve the component parts of the economising problem. Finally, we will apply the concepts of opportunity cost, comparative advantage and specialisation to the analysis of three important issues. These are: the impact of technological advance; the trade-off between current consumption and investment and future possibilities; and, an issue of great importance, the economic basis for trade between nations.

LEARNING OBJECTIVES

- **Discuss the two fundamental facts that form the bases of the economising problem.**
- **Define the economising problem and expand upon the definition of economics introduced in Chapter 1.**
- **Discuss the meaning of economic efficiency and examine the importance of specialisation to its achievement.**
- **Illustrate, extend and modify our definition of economics through the use of production possibilities tables and curves.**
- **Introduce the concept of opportunity cost; the law of increasing opportunity costs; and the law of comparative advantage.**
- **Restate and discuss the economising problem in terms of five fundamental questions.**
- **Survey briefly the different ways in which institutionally and ideologically diverse economies respond to the economising problem.**
- **Briefly discuss the roles of markets and money within the economic systems of industrially advanced economies.**
- **Use the production possibilities curve model to examine: the trade-off between current and future consumption; and the importance of comparative advantage as a basis for trade between nations.**

THE FOUNDATION OF ECONOMICS

There are two fundamental facts that constitute the **economising problem** and thus provide a foundation for the field of economics. We must carefully state and fully understand these two facts, since everything that follows in our study of economics depends either directly or indirectly upon them.

1 Society's material wants, that is, the material wants of its citizens and institutions, are virtually unlimited, or insatiable.

2 Economic resources—the means of producing goods and services—are limited or scarce.

UNLIMITED WANTS

Material wants: the desires of consumers to obtain and use various goods and services that give utility.

At any given time, the individuals and institutions that constitute society have innumerable **material wants** unfulfilled. But what do we mean by the term 'material wants'? We mean the desires of consumers to obtain various goods and services, the consumption of which provides **utility**. Utility is the economist's term for pleasure or satisfaction.

Some of these material wants—food, clothing, and shelter—have biological roots. But the conventions and customs of society—the social and cultural environment in which we live—influence our material wants as well. Thus an amazingly wide range of products fit the bill: houses, cars, toothpaste, CDs, pizzas, jeans and so on. Innumerable products that we sometimes classify as

Utility: the economist's term for pleasure or satisfaction.

necessities (food, shelter and clothing), and luxuries (perfumes, yachts and champagne), are all capable of satisfying human wants. Of course what is a luxury to Smith may be a necessity to Jones, and what is viewed as a common necessity today may have been a luxury a few short years ago.

Services may also satisfy our wants as much as tangible products. Car repair, an appendectomy, a haircut and legal advice also satisfy human wants. On reflection, we realise that we buy many goods—for example, consumer durables such as cars and washing machines—for the services they provide. The differences between goods and services are often less than they first seem.

As a group, our material wants are insatiable (unlimited), meaning that our material wants for goods and services are incapable of ever being completely satisfied. Our wants for a particular good or service can obviously be satisfied; that is, over a short period of time we can obtain sufficient amounts of toothpaste or beer. But goods and services in general are another story. Here we do not, and presumably cannot, obtain enough.

Further, over time, our wants seem to multiply: at the same time as we fill some of the wants, we add new ones. The rapid development and introduction of new products attract our interest, and extensive advertising and sales promotion try to persuade us that we need items we might not otherwise consider buying. Not long ago we had no desire for digital-video discs (DVDs), mobile phones with a built-in fax capability or Internet connection. Furthermore, we often cannot stop with simple satisfaction: the acquisition of a new Ford may whet the appetite for a Porsche or Mercedes.

The overall objective of all economic activity is to attempt to satisfy all these diverse material wants.

SCARCE RESOURCES

Economic resources: all the natural, human and manufactured resources that go into the production of goods and services.

Consider the second fundamental fact that *economic resources are limited or scarce*. What do we mean by **economic resources**? In general, we mean all the natural, human and manufactured resources that go into the production of goods and services. This obviously covers many things: factory and farm buildings; all equipment, tools and machinery used in the production of manufactured goods and agricultural products; a variety of transport and communication facilities; innumerable types of labour; and land and mineral resources of all kinds. Economists broadly classify such resources as:

1 *property* resources—land, raw materials and capital;

2 *human* resources—labour and entrepreneurial ability.

RESOURCE CATEGORIES

Let us examine the various resource categories.

Land

Land: an economic resource which includes all the natural resources that go into the production of goods and services.

The economist means more than is usually understood by the term **land**. Land constitutes all natural resources—all 'gifts of nature'—that are useable in the productive process. Such resources include arable land, forests, mineral and oil deposits, and water.

Capital

Capital, or investment goods, consists of those goods manufactured as aids to production. Capital includes factory, storage, transport and distribution facilities, and all tools, machinery and equipment used in producing goods and services

Capital: all the manufactured aids to production used to produce goods and services and distribute them to the final consumer without directly satisfying human wants.

Investment: the process of producing and accumulating capital goods.

and getting them to the ultimate consumer. The process of producing and accumulating capital goods is known as **investment**.

Capital goods ('tools') differ from consumer goods because the latter satisfy wants directly, whereas the former satisfy wants indirectly by facilitating the production of consumable goods. Note especially that the term 'capital' as here defined does not refer to money. True, businesspeople and economists often talk of 'money capital', meaning money available to purchase machinery, equipment and other productive facilities. But money, as such, produces nothing; hence, it is not considered as an economic resource.

Real capital—tools, machinery and other productive equipment—is an economic resource; *money* or *financial capital* is not.

Labour

Labour: a broad term the economist uses for all human physical and mental talents (excluding entrepreneurial ability) that can be used in producing goods and services.

Labour is the economist's broad term for all human physical and mental talents that can be used in producing goods and services. (This excludes a special class of human talent—entrepreneurial ability—which, because of its special significance in a capitalistic economy, we consider separately.) Thus the services of a builder's labourer, retail clerk, machinist, teacher, band member and investment banker all fall under the general heading of labour.

Entrepreneurial ability

Entrepreneurial ability: the human resource which combines the other resources to produce a product, make non-routine decisions, innovate, and bear risk.

Finally, there is this special human resource we label **entrepreneurial ability** or, more simply, *enterprise*. We assign four related functions to the entrepreneur.

The entrepreneur takes the *initiative* in combining the resources of land, capital and labour in the production of a good or service. Acting as both spark plug and catalyst, the entrepreneur is at once the driving force behind production, and the agent who combines the other resources in what is hoped will be a profitable venture.

The entrepreneur makes basic business policy *decisions*, that is, those non-routine decisions that set the course of a business enterprise.

The entrepreneur is an *innovator*—the one who attempts to introduce, on a commercial basis, new products, new production techniques or even new forms of business organisation.

The entrepreneur is a *risk bearer*. This is apparent from a close examination of the other three functions. The entrepreneur in a capitalistic system has no guarantee of profit. The reward for entrepreneurs' time, efforts and abilities may be attractive profits, or losses and eventual bankruptcy. They risk not only time, effort and business reputation, but also their invested funds and those of associates or shareholders.

RESOURCE PAYMENTS

The income received from supplying land or raw materials is called *rental* income, while that from providing capital is called *interest* income. The income accruing to those who supply labour is called *wages* and includes salaries and various wage and salary supplements in the form of bonuses, commissions,

royalties and so on. Entrepreneurial income is called *profits*, which, of course, may be a negative figure—that is, losses.

The four broad categories of economic resources, or *factors of production* or *inputs* as they are often called, leave room for debate when it comes to classifying specific resources. For example, suppose you receive a dividend on some BHP shares that you own. Is this an interest return for the capital equipment that the company was able to buy with the money you provided in buying the shares? Or is this return a profit that compensates you for the risks involved in purchasing company shares? What about the earnings of a one-person corner store where the owner is both the entrepreneur and the labour force? Are the owner's earnings to be considered as wages or profit income? The answer to these situations is 'some of each'. The point is this: while we might argue about classifying a given flow of income as wages, rent, interest or profits, all income can be listed under one of these general headings.

RELATIVE SCARCITY

Economic resources, or factors of production, have one fundamental characteristic in common: *economic resources are scarce, or limited in supply.* Our planet contains only limited amounts of resources available for the production of goods and services. Quantities of arable land, mineral deposits, capital equipment and labour services are not infinite—they are limited. This scarcity is a constraint on productive activity, so that the output of goods and services is also limited. Society is not able to consume all that it wants. Thus in Australia, which is one of the world's more affluent nations, output per person was limited to about $31 500 in 1998–99. In the poorest nations, output per year per person was as low as $170.

RELATIVE INTENSITY OF RESOURCE USE IN PRODUCTION

Labour- (land-, capital-) intensive commodity: a commodity in which the production process uses relatively large amounts of the labour (land, capital) resource compared to the average rate at which this resource is combined with others in the economy's production process.

Economic resources are not combined in the same proportions to produce each product. A product is said to be a relatively **land-intensive** product if its production process uses relatively large amounts of the land resource compared to the average rate at which this resource is combined with the other resources in the economy's production processes. For example, we find that the production of gold is relatively land-intensive.

Similarly, a product is said to be relatively **labour-intensive** if its production process uses relatively large amounts of the labour resource compared to the average use of labour in production processes throughout the economy. For example, the production of hairdressing services is relatively labour-intensive.

Finally, a product is said to be relatively **capital-intensive** in its production process when it uses capital in relatively greater proportions in its combination with other resources than generally utilised in the economy's production processes. Examples of capital-intensive industries include oil refining and power generation, which require few workers but very large amounts of capital for production.

Concept highlights

- The foundation of economics lies in the two fundamental facts that constitute the economising problem: society's material wants are unlimited; and the economic resources available to satisfy these wants are scarce or limited in supply.
- Material wants represent those goods and services that, when consumed, provide utility (satisfaction) to consumers.
- Society's scarce economic resources are described under four categories: land, which represents all natural resources; capital, which represents all goods and services that aid in the production and delivery of consumption goods and services to consumers; labour, representing the physical and mental talents used to produce goods and services; and entrepreneurial ability.
- Entrepreneurial ability combines four functions: initiative in combining the factors of production; the making of business policy decisions; innovation in terms of production outputs, techniques or business organisation; and the bearing of business risk.
- In exchange for supplying resources, the owners of the resources receive income payments: rental for land; interest for capital; wages for labour; and profit for entrepreneurial endeavour.
- The production of particular goods and services requires relatively intensive use of one resource when compared to the average use of each resource in all the economy's production processes.

ECONOMICS AND EFFICIENCY

Efficiency: the result of using or administering scarce resources to produce the maximum amount of desired goods and services, thereby achieving the greatest possible fulfilment of society's wants.

As stated in Chapter 1, economics is the social science concerned with the problem of using or administering scarce resources (the means of producing) in order to attain the greatest or maximum fulfilment of society's unlimited wants (the goal of producing). Economics is concerned with 'doing the best with what we have'. If our resources are scarce, we cannot satisfy all of society's material wants. The next best thing is to achieve the greatest possible satisfaction of these wants.

Society wishes to use its limited resources efficiently; that is, it wants to obtain the maximum amount of desired goods and services producible with its available resources. To achieve this, it must realise both full employment and full production. Economics is a science of **efficiency**—efficiency in the use of scarce resources.

FULL EMPLOYMENT

Full employment: the employment of all available resources.

By **full employment** we mean that all available resources should be employed: no workers should be involuntarily out of work; no capital equipment or arable land should sit idle. Notice that we say that all *available* resources should be employed. Different societies have customs and practices that determine which resources are available for employment. For example, legislation and custom provide that children and the very elderly should not be employed. Further, it is desirable for productivity to allow land to lie fallow periodically. Finally, some resources will need to be conserved for the future.

FULL PRODUCTION

Full production: the maximum amount of goods and services that can be produced from the employed resources of an economy.

Allocative efficiency: occurs when all available resources are devoted to the combination of goods most wanted by society.

Productive efficiency: occurs when goods or services are produced using the lowest-cost production methods.

The employment of all available resources is not sufficient to achieve efficiency. **Full production** must also be achieved. By full production we mean that all employed resources should be used to make the most valued contributions to output. If we fail to achieve full production, economists say that our resources are *underemployed*.

Full production implies that two kinds of efficiency—allocative and productive efficiency—are achieved.

1 **Allocative efficiency** means that resources are devoted to the combination of goods and services most wanted by society. For example, society wants CDs rather than records. The most desired combination of goods and services we call the *optimum product mix*.

2 **Productive efficiency** occurs when the least costly production techniques are used to produce the desired goods and services. Efficiency requires that Fords and Holdens be produced with computer-based robot assembly techniques rather than with the primitive assembly lines of the 1950s. Nor do we want our wheatgrowers to harvest with scythes, when elaborate harvesting machines will do the work at a fraction of the cost per tonne.

SPECIALISATION AND EFFICIENCY

The extent to which society relies upon specialisation to enhance productive efficiency is astounding. For example, the vast majority of consumers produce virtually none of the goods and services they consume and, conversely, consume little or nothing of what they produce. Few households seriously consider any extensive production of their own food, shelter and clothing. Society learned long ago that self-sufficiency breeds inefficiency. Two major forms of specialisation enhance productive efficiency: the division of labour and geographic specialisation.

Division of labour

In what specific ways might human specialisation—the **division of labour**—enhance productive efficiency?

Specialisation permits individuals to take advantage of existing differences in their *abilities* and skills. If cavedweller A is strong, quick and accurate with a spear, and cavedweller B is weak and slow, but patient, this distribution of talents can be most efficiently utilised if A hunts and B fishes.

Even if the abilities of A and B are identical, specialisation may prove to be advantageous. By devoting all our time to a single task, we are more likely to develop the appropriate skills and to discover improved techniques than when apportioning time among a number of diverse tasks. We *learn by doing*. We learn to be a good hunter by hunting!

Finally, specialisation—devoting all our time to, say, a single task—obviously *avoids the loss of time* entailed in shifting from one job to another.

For all these reasons, the division of labour results in greater productive efficiency in the use of human resources.

Geographic specialisation

Specialisation is also desirable on a regional basis. Sugar could be grown in Western Australia, but because of the unsuitability of the land, rainfall and temperature, the costs would be very high. Queensland could probably produce some iron, but such production would be relatively costly. As a result, Western Australia produces those products—iron in particular—to which its resources are best adapted, and Queensland does the same, producing sugar. In this way both produce surpluses of their specialties. Then, very sensibly, Western Australia and Queensland effectively swap, through the market system, some of their surpluses. Specialisation permits each area to turn out those goods its resources can most efficiently produce. In this way both Western Australia and Queensland can obtain a larger amount of both iron and sugar than would otherwise be the case. As we shall see later in this chapter, geographic specialisation also forms a basis for trade between nations.

PRODUCTION POSSIBILITIES TABLE

The economising problem can be clarified by use of a production possibilities table. This device reveals the core of the economising problem. *Because resources are scarce, a full-employment, full-production economy cannot have an unlimited output of goods and services. As a result, choices must be made about which goods and services to produce and which to go without.*

ASSUMPTIONS

Several specific assumptions will set the stage for our illustration.

1. *Efficiency*: The economy is operating at full employment and achieving productive efficiency.
2. *Fixed resources*: The available supplies of the factors of production are fixed in quantity and quality. They can, however, be shifted or reallocated, within limits, among different uses; for example, a relatively unskilled labourer can work on a farm or in a fast-food outlet, or serve petrol.
3. *Fixed technology*: The state of the technological development is constant; that is, technology does not change during the course of our analysis.

   The second and third assumptions are another way of saying that we are looking at our economy at some specific point in time, or over a very short period of time. Over a relatively long period it would clearly be unrealistic to rule out technological advances and the possibility that resource supplies might vary.
4. *Two products*: To simplify our illustration further, we suppose our economy is producing just two products—for example, tractors and chocolate—instead of the innumerable goods and services actually produced. Chocolate is symbolic of **consumer goods**; that is, those goods and services that directly satisfy our wants. Tractors are symbolic of **capital goods**; that is, those goods that satisfy our wants indirectly by permitting more efficient production of consumer goods.

NECESSITY OF CHOICE

It is evident from the assumptions that a choice must be made between alternatives. Resources are limited. Thus the total amounts of tractors and

chocolate that our economy is capable of producing are limited. Limited resources mean a limited output. Since resources are limited in supply and fully employed, any increase in the production of tractors will necessitate the shifting of resources away from the production of chocolate. And the reverse holds true: if we choose to step up the production of chocolate, the necessary resources must come at the expense of tractor production. Society cannot have its cake and eat it, too. Facetiously put, there's no such thing as a 'free lunch'. This is the essence of the economising problem.

Table 2.1, a **production possibilities table**, lists some alternative combinations of tractors and chocolate that our hypothetical economy might conceivably choose. Though the data in this and following production possibilities tables are hypothetical, the points illustrated are of great practical significance.

Table 2.1 Production possibilities of chocolate and tractors with full employment, 2000 (hypothetical data)

Type of product	Production alternatives				
	A	*B*	*C*	*D*	*E*
Chocolate (in hundred thousand bars)	0	1	2	3	4
Tractors (in thousands)	10	9	7	4	0

At alternative *A*, our economy would be devoting all its resources to the production of tractors (capital goods). At alternative *E*, all available resources would be devoted to the production of chocolate (consumer goods). Both these alternatives are clearly unrealistic extremes; any economy typically strikes a balance in dividing its total output between capital and consumer goods. As we move from alternative *A* to *E*, we step up the production of consumer goods (chocolate) by shifting resources away from the production of capital goods.

Remember that because consumer goods directly satisfy our wants, any movement towards alternative *E* looks tempting. In making this move, society increases the current satisfaction of its wants. But there is a cost involved. This transfer of resources catches up with society over time, as society's stock of capital goods dwindles—or at least ceases to expand at the current rate—with the result that the efficiency of future production is impaired. In moving from alternative *A* towards *E*, society is in effect choosing 'more now' at the expense of 'much more later'.

In moving from *E* towards *A*, society is choosing to forgo current consumption. This sacrifice of current consumption frees resources that can now be used in stepping up the production of capital goods. By building up its stock of capital, society can anticipate more efficient production and, therefore, greater consumption in the future.

At any point in time, a full-employment, full-production economy must sacrifice some of product X to obtain more of product Y. The basic fact that economic resources are scarce prohibits this type of economy from having more of both *X* and *Y*.

PRODUCTION POSSIBILITIES CURVE

To further our understanding of the production possibilities table, we can present the data graphically. We employ a simple two-dimensional graph, putting the

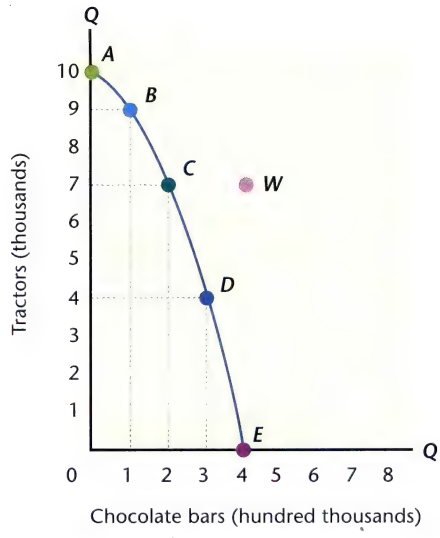


Figure 2.1
The production possibilities curve

Each point on the production possibilities curve represents some maximum combined output of any two products. Society must choose which product mix it desires: more tractors mean less chocolate, and vice versa. Points such as W are unobtainable because of limited resource availability.

output of tractors (capital goods) on the vertical axis and the output of chocolate (consumer goods) on the horizontal axis (see Figure 2.1). Following the plotting procedure that was discussed in the appendix to Chapter 1, we can draw the 'production possibilities curve'.

Each point on the production possibilities curve represents some maximum output of the two products. The curve is, in effect, a *frontier*. To realise the various combinations of chocolate and tractors that fall on the production possibilities curve, society must achieve full employment and full production. All combinations of chocolate and tractors on the curve represent maximum quantities attainable only as the result of the most efficient use of all available resources. Points lying *inside* the curve are also attainable, but are not as desirable as points on the curve. These interior points represent a failure to achieve full employment and full production. Points, such as *W*, lying *outside* the production possibilities curve would be superior to any point on the curve. But such points are unobtainable, given the current supplies of resources and technology. The production barrier of limited resources prevents the production of any combination of goods lying outside the production possibilities curve.

LAW OF INCREASING OPPORTUNITY COSTS

Opportunity cost: the amount of other products that must be forgone or sacrificed to obtain a unit of any product.

We have stressed that—since resources are scarce, relative to the virtually unlimited wants that people attempt to satisfy by using these resources—choices must be made between alternatives. More of *X* (chocolate) means less of *Y* (tractors). *The amount of other products that must be forgone or sacrificed to obtain a unit of any other product is called the opportunity cost of that product.* In our case, the units of tractors (*Y*) that must be forgone to get an additional unit of chocolate (*X*) is the **opportunity cost** of *X*. Hence, in moving from possibility *A* to *B* in Table 2.1, we find that the cost of 1 unit of chocolate is 1 unit of tractors.

If we pursue the concept of cost through the additional production possibilities—*B* to *C*, *C* to *D*, and so on—an important economic principle is revealed. In moving from alternative *A* to alternative *E*, the sacrifice or cost of tractors involved in getting each additional unit of chocolate increases. In moving from *A* to *B*, just 1 unit of tractors is sacrificed for 1 more unit of chocolate. However, going from *B* to *C* involves the sacrifice of 2 units of tractors for 1 more of chocolate; then 3 of tractors for 1 of chocolate, and, finally, 4 for 1. Conversely, you should confirm that, in moving from *E* to *A*, the cost of an additional tractor is $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, and 1 unit of chocolate, respectively, for each of the four shifts.

Note that this discussion of opportunity cost is couched in *real* or physical terms rather than monetary terms. Further, the analysis is in terms of *added* or *marginal* cost of a good rather than the total, or cumulative, opportunity cost. The opportunity cost of an extra unit of *X* is the units of *Y* forgone or extra loss from the total output of *Y*.

Business IMPLICATION

OPPORTUNITY COST OF ENTREPRENEURIAL EFFORT

Many people that start their own businesses end up ignoring the opportunity cost of their own entrepreneurial effort. This is particularly the case in the small business area, where owner–managers often work very long hours for very little income. Although the psychic benefits of being your own boss may be significant, it is important that you ask the following question: 'What would my time and effort be worth if someone else were to pay for it?'

CONCAVITY

Graphically, the **law of increasing opportunity costs** is reflected in the shape of the production possibilities curve. Specifically, the curve is *concave*, or bowed out from the origin. Consider the heights of the vertical dashed lines in Figure 2.1. When the economy moves from A towards E it must give up successively larger amounts of tractors (1, 2, 3, then 4 units), to acquire equal increments of chocolate (1 unit in each case). Technically, this means that the slope of the production possibilities curve becomes steeper as we move from A to E, and such a curve, by definition, is concave when viewed from the origin.

RATIONALE

What is the economic rationale for the law of increasing opportunity costs? Why does the sacrifice of tractors increase as we get more chocolate? The complete answer is rather complex. But, simply stated, it amounts to this: *Economic resources are not completely adaptable to alternative uses.* As we attempt to step up chocolate production, resources that are less and less adaptable to this use must be induced, or 'pushed', into that line of production. If we start at A and move to B, we can first pick resources whose productivity in the making of chocolate is high relative to their productivity in the making of tractors. But, as we move from B to C, C to D, and so on, those resources that are highly productive in the making of chocolate become increasingly scarce. To obtain more chocolate, resources will be needed whose productivity in the making of tractors is great in relation to their productivity in the making of chocolate. It will take more and more of such resources—and hence a greater sacrifice of tractors—to achieve a given increase of 1 unit in the production of chocolate.

This lack of perfect flexibility, or interchangeability, on the part of resources, and the resulting increase in the amount of one good that must be sacrificed in order to acquire more and more units of another good, is the rationale for the law of increasing opportunity costs. In this case, these costs are stated as sacrifices of goods and not in terms of dollars and cents.

ALLOCATIVE EFFICIENCY REVISITED

Our analysis has purposely stressed full employment and productive efficiency, the realisation of which allows society to achieve *any point* on its production possibilities curve. We now focus again on allocative efficiency, or determining the most valued or optimal point on the production possibilities curve. Of all the attainable combinations of chocolate and tractors on the curve in Figure 2.1, which is optimal or 'best'? That is, what quantities of resources should be allocated to chocolate and what quantities to tractors?

Our discussion of the 'economic perspective' in Chapter 1 puts us on the right track. Recall that economic decisions rely on comparisons of marginal benefits

and marginal costs. Any economic activity—for example, production or consumption—should be expanded so long as marginal benefits exceed marginal costs, and should be reduced if marginal costs are greater than marginal benefits.

Generalisation: Resources are being efficiently allocated to any product when its output is such that its marginal benefit equals its marginal cost (MB = MC). Assume that, by applying this analysis to our two products, we find that 200 000 and 7 are the *most* desirable quantities. This would mean that alternative *C* on our production possibilities curve—200 000 bars of chocolate and 7000 tractors—would result in allocative efficiency for our hypothetical economy.

Concept highlights

- Economic efficiency is achieved when society gains the maximum output from its scarce resources. This requires that full employment and full production are achieved.
- Full employment requires that all resources available to a society, given its legislation and customs, are employed.
- Full production means producing the 'right' goods for society given the wants of its members (allocative efficiency) in the 'best' or least-cost way (productive efficiency). An implication of this is that the marginal benefit of an increase in the output of one product is equal to its marginal cost of production.
- Achievement of productive efficiency depends on optimising the benefits of division of labour—maximising the contributions of different abilities, making use of the effects of learning by doing, and reducing time losses involved in the transfer from one activity to another—and geographic specialisation in a way such that no resources are underemployed.
- Opportunity cost is couched in *real* terms, and is shown by the slope of the production possibilities curve. The opportunity cost of a product represents the amount of an alternative product that must be sacrificed to obtain an additional, or marginal, unit of that product.
- The *law of increasing opportunity costs* is reflected in the concave shape of the production possibilities curve. The economic rationale for the law of increasing opportunity costs is that economic resources are not completely adaptable between alternative uses. Thus, as we increase the production of product *A* at the cost of product *B*, we move resources that are less and less suited to the production of *A* away from the production of *B*.

Business IMPLICATION — OPPORTUNITY COST

The area of opportunity cost is one that provides the 'dismal science' of economics an edge over many other social sciences in the formulation and delivery of business and policy advice. Although often unpopular, the idea that we should look very carefully at the opportunity cost of our decisions—that is, at the next best alternatives forgone—reminds us of a number of important things. The first is that we have choices; there is no single 'correct' way to solve many problems. Looking at alternatives reduces the chance of making costly mistakes. The second is that if we make a decision, there will be opportunities lost, resources used etc. that had value to us before taking the alternative that we have chosen. This may make us think more carefully about the full costs of any path taken. The result should be decisions that have been better thought out.

UNEMPLOYMENT AND GROWTH

It is important to explore what happens when the first three assumptions underlying our explanation of the production possibilities model (see page 40) are relaxed.

UNEMPLOYMENT AND UNDEREMPLOYMENT

The first assumption was that our hypothetical economy is characterised by full employment and productive efficiency. How would our analysis and conclusions be altered if idle resources were available (that is, if there is unemployment) or if least-cost production was not realised? With full employment and productive efficiency, our five alternatives in Table 2.1 represent a series of maximum outputs; that is, they illustrate combinations of tractors and chocolate that might be produced when the economy is operating at its full capacity. With unemployment or productive inefficiency, the economy would obviously be producing less than indicated by each of the alternatives shown in Table 2.1.

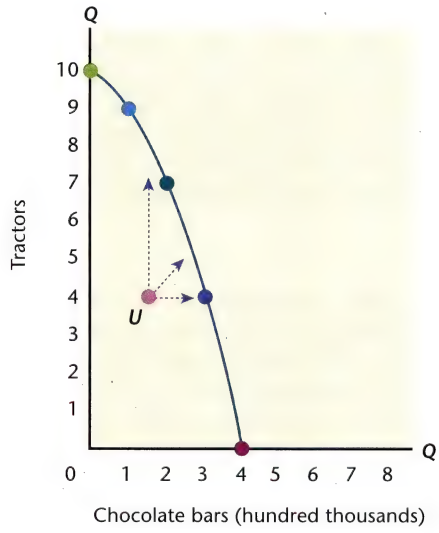


Figure 2.2
Unemployment and the production possibilities curve

Any point inside the production possibilities curve, such as *U*, indicates unemployment or underemployment. By moving towards full employment and full production, the economy can produce more of either or both of the two products, as the arrows indicate.

Graphically, a situation of unemployment or productive inefficiency can be illustrated by a point inside the original production possibilities curve. Point *U* on Figure 2.2 is one such point. Here the economy is obviously falling short of the various maximum combinations of chocolate and tractors reflected by all the points on the production possibilities curve. We are producing less of at least one of our alternative products than is possible given our current level of technology and resources. The broken arrows in Figure 2.2 indicate three of the possible paths back to full employment and least-cost production. A movement towards full employment and productive efficiency will obviously entail a greater output of at least one if not both products.

A GROWING ECONOMY

When we drop the remaining assumptions that the quantity and quality of resources and technology are fixed, the production possibilities curve will shift position; that is, the potential total outputs of the economy will change.

EXPANDING RESOURCE SUPPLIES

Let us abandon the simplifying assumption that our total supplies of land, labour, capital and entrepreneurial ability are fixed in quantity and quality. Commonsense tells us that over a period the growing population in Australia will result in increased supplies of labour and entrepreneurial ability. Historically, our stock of capital has increased at a significant, although unsteady, rate. And, although we are depleting some of our energy and mineral resources, new sources are being discovered. The well-managed drainage of swamps and the development of irrigation programs may add to our supply of arable land.

The net result of these increased supplies of the factors of production will be the ability to produce more of both tractors and chocolate. Thus in say, 2018, the production possibilities of Table 2.1 for 2000 may be obsolete, having given way to those shown in Table 2.2. Observe that the greater abundance of resources results in a greater output of one or both products at each alternative. **Economic growth**, in the sense of an expanded total output, has occurred.

Table 2.2 Production possibilities of chocolate and tractors with full employment, 2018 (hypothetical data)

Type of product	Production alternatives				
	A′	*B′*	*C′*	*D′*	*E′*
Chocolate (in hundred thousand bars)	0	2	4	6	8
Tractors (in thousands)	14	12	9	5	0

Such a favourable shift in the production possibilities curve does not, however, guarantee that the economy will operate at a point on that new curve. The economy might fail to realise its new potential. Some 9.5 million jobs will give us full employment at the present time, but 10 years from now our labour force, because of a growing population, will be much larger and 9.5 million jobs will not be sufficient for full employment. The production possibilities curve may shift, but the economy may fail to produce at a point on that new curve.

TECHNOLOGICAL ADVANCE

Our other simplifying assumption is a constant or unchanging technology. Observation tells us that technology has progressed with amazing rapidity over a long period. What are the effects of advances in technology? These include new and better goods and improved ways of producing these goods. For now, let us think of technological progress as involving only improvements in capital facilities, that is, more efficient machinery and equipment. Such technological advance alters our earlier discussion of the economising problem by improving productive efficiency, so allowing society to produce more goods with a fixed amount of resources. As with increases in resource supplies, technological advance permits the production of more tractors and more chocolate.

ILLUSTRATING GROWTH

We can use our production possibilities curve to provide us with a clear idea of the impact of economic growth on the production choices that society faces. When the supplies of resources increase or an improvement in technology occurs, the production possibilities curve shifts outwards and to the right, as illustrated by the curve $A'E'$ in Figure 2.3. Economic growth can be reflected as a rightward shift of the production possibilities curve; it is the result of increases in resource supplies, improvements in resource quality and technological progress. The consequence of growth is that our full-employment economy can enjoy a greater output of both chocolate and tractors.

Economic growth need not and usually does not entail proportionate increases in a nation's capacity to produce various products. Note in Figure 2.3 that, while the economy is able to produce twice as much chocolate, the increase in tractor production is only 40 per cent.

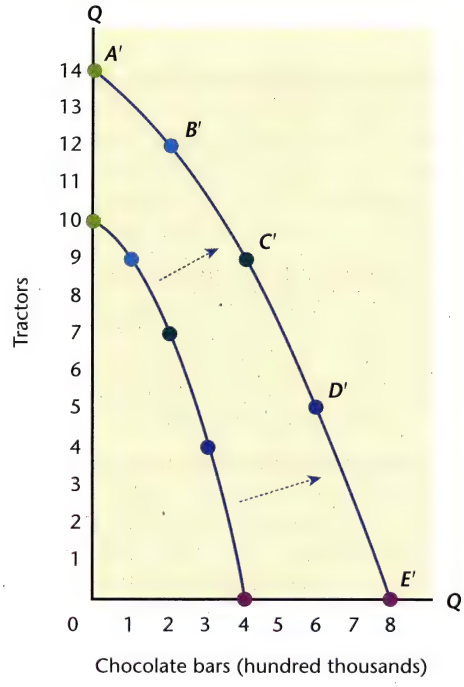


Figure 2.3
Economic growth and the production possibilities curve

The expanding resource supplies and technological advances that characterise a growing economy move the production possibilities curve outwards and to the right. This permits the economy to enjoy larger quantities of both types of goods.

On Figure 2.3, pencil in two new production possibilities curves. One should show the situation where a better technique for producing tractors has been developed, while the technology for producing chocolate remains unchanged. The other should show the situation where an improved technology for producing chocolate has been developed, while the technology for producing tractors remains unchanged. In each case, the intercept on the axis for the product for which there has been no technological advance does not change; the production possibilities curve moves out only along the axis of the product for which a better production technique has been developed. However, the general result is that, given its existing supplies of resources, society may choose to produce and consume more of both products even though technological improvement has only occurred in one area.

Concept highlights

- We may illustrate unemployment or inefficient production (underemployment) within the production possibilities framework by locating the current output of the economy at a point that lies within the production possibilities curve.
- When the supplies of resources increase or an improvement in technology occurs, the production possibilities curve shifts outwards and to the right.
- Economic growth can be reflected as a rightward shift of the production possibilities curve; it is the result of increases in resource supplies, improvements in resource quality and technological progress.
- The consequence of growth is that our full-employment economy can enjoy a greater output of both products, even though economic growth does not typically entail proportionate increases in a nation's capacity to produce each alternative product.

FIVE FUNDAMENTAL QUESTIONS

Having examined the economising problem through considering production possibilities, we now look at the problem from another perspective. The economising problem can be broken down into **five component parts** or **fundamental questions**.

1 **How much total output is to be produced?**
At what level or degree should resources be utilised in the production process? The answer to this question helps determine the location of the

production possibilities curve and, therefore, how much total output a society can produce.

2 **What combination of outputs is to be produced?**
Society must decide what collection of goods and services will most fully satisfy its wants. Which specific goods and services are to be produced? In what quantities do we want each produced? In our discussion of the production possibilities curve, we assumed a two-product economy and the optimum point will be some particular point on the curve.

3 **How are these outputs to be produced?**
Having determined the desired composition of total output, we ask: 'How should this total output be produced? Which firms should do the production? How will they choose the ideal (least cost) combination of resources and the best technology to use in producing the chosen output? Alternatively, how can we guarantee we are on the production possibilities curve?'

4 **Who is to receive and consume these outputs?**
How is society to share the total output among the various economic units that comprise our economic system? How, for example, will the total output of final goods and services be shared by the various households in our economy? This is the fundamental question of distribution.

5 **How can the system adapt to change?**
Can the economic system make the appropriate responses required to remain efficient over time? Modern societies are dynamic and changing systems. Many things change: consumer tastes, the supplies of resources, and technology. All these changes imply the need for significant reallocations of resources to preserve efficiency in their use.

SCARCITY OF ECONOMIC RESOURCES

Scarcity of economic resources lies behind all five of these fundamental questions. They are a breakdown of the basic economising problem of balancing scarce resources and unlimited wants.

The interrelatedness of these questions is apparent. It is difficult to treat them independently of one another: they require simultaneous treatment.

Concept highlights

The economising problem can be broken down into the following five component parts or fundamental questions:

- How much total output should society produce? The location of the production possibilities curve is determined by choosing the level at which resources should be utilised in the production process.
- What combination of outputs is to be produced? Society must decide which specific goods and services are to be produced and in what quantities to most fully satisfy its wants.
- How are these outputs to be produced? Society must determine which firms should produce the outputs, and how to choose the least-cost combination of resources and the best technology in the production process.
- Who is to receive and consume these outputs? This is the fundamental question of distribution.
- How can the system adapt to change?

Asian FOCUS

GOVERNMENTS HELPING TO SOLVE THE 'WHAT' PROBLEM

In most economies the 'what to produce' problem is rarely left entirely to the private sector. Government is actively involved through both its regulatory and legal frameworks, and through direct entry into the product markets. The Asian region provides us with good examples of the degree to which this intervention varies in importance when compared across economies. In this case, we have chosen to look at the government share of investment relative to the value of national output of goods and services (GDP).

Country	Investment (per cent of GDP)
Australia	12.9
Bangladesh	23.5
China	24.9
India	32.4
Indonesia	15.7
Japan	6.0
Malaysia	25.9
Pakistan	25.9
Philippines	9.9
Thailand	10.4

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. In what sort of items do governments make investments? Provide examples.
2. In light of your answer to question 1, can you provide some explanations for part of the apparent difference in the relative share of government in total investment in the countries listed in the above table?
3. What non-economic factors will help to explain the role of government in the 'what to produce' decision? Explain.

THE 'ISMS'

We must recognise that the way in which the five fundamental questions are answered depends in part on the type of economic system we are considering. A variety of different institutional arrangements and coordinating mechanisms may be used to respond to the questions of what to produce, for whom, and so on. Historically, many of the industrially advanced economies of the world have differed essentially on two grounds:

- the ownership of the means of production
- the method by which economic activity is coordinated.

We will examine briefly the main characteristics of two 'polar' types of economic systems.

PURE CAPITALISM

Pure capitalism, or **laissez-faire capitalism**, is characterised by the private ownership of property and resources, freedom of enterprise and choice, and the

use of a system of markets and prices to coordinate and direct economic activity. In such a system, each participant is motivated by his or her own self-interest: each economic unit seeks to maximise its income through individual decision-making. The market system functions as a mechanism through which individual decisions and preferences are communicated and coordinated.

An assumption of pure capitalism is that goods and services are produced and resources are supplied under competitive conditions; that is, there are many independently acting buyers and sellers of each product and resource. As a result, economic power is widely dispersed. Advocates of pure capitalism argue that such an economy encourages efficiency in the use of resources and in production of outputs, employment stability, and rapid economic growth. Hence there is limited need for government planning control, or intervention. Indeed, the term 'laissez faire' ('leave alone') means keeping government from interfering with the economy, because such interference simply disturbs the efficiency with which the market system functions. Government's role is therefore limited to the protection of private property and establishing the appropriate legal framework to facilitate the functioning of free markets.

THE COMMAND ECONOMY

The polar alternative to pure capitalism is the **command economy**, or **communism**, characterised by public ownership of virtually all property and resources, and the collective determination of economic decisions through central economic planning. All major decisions concerning the level of resource use, the composition and distribution of output, and the organisation of production are determined by a central planning organisation. Business firms are owned by the government, and production is according to state directives.

Production targets for each enterprise are determined by a planning organisation. A production plan specifies the amounts of resources to be allocated to each enterprise so that it can achieve its planned production goals. The division of output between capital and consumer goods is centrally decided and capital goods are allocated among industries in terms of the central planning organisation's long-term priorities. The questions of what, how and so on are essentially centrally determined.

MIXED SYSTEMS

Real-world economies lie between the extremes of pure capitalism and the command economy. The Australian economy leans towards pure capitalism, but has important differences from it. Government plays an active role in our economy in promoting economic stability and growth, in providing certain goods and services that would be under-produced or not produced at all by the market system, and in modifying the distribution of income. In contrast to the wide dispersion of economic power among many small units that characterises pure capitalism, Australian capitalism has spawned powerful economic organisations in the form of huge companies and strong unions. The ability of these power blocs to manipulate and distort the functioning of the market system to their advantage provides a further reason for government involvement in the economy.

While the former Soviet Union (USSR) historically approximated the command economy, it relied to some extent on market-determined prices, and had some elements of private ownership. These were important, particularly in the distribution of output amongst consumers. Recent reforms in the former USSR and most of the eastern European nations, and to an extent in China, have been

designed to move these command economies towards more capitalistic, market-oriented systems.

Private ownership and reliance on the market system do not always go together, nor do central planning and public ownership. For example, the fascism of Hitler's Nazi Germany has been called **authoritarian capitalism** because the economy was subject to a high degree of government control and direction but property was privately owned. In contrast, the former Yugoslav economy of **market socialism** was characterised by public ownership of resources, coupled with an increasing reliance upon free markets to organise and coordinate economic activity. The Swedish economy is also a hybrid system. Although over 80 per cent of economic activity is conducted in the private sector, government is deeply involved in achieving economic stability and in redistributing income. In fact, Swedish government expenditures as a percentage of GDP are amongst the highest in the OECD (Organisation for Economic Cooperation and Development) at 46.1 per cent, compared to 26.3 per cent in Australia. Similarly, the capitalistic economy of Japan involves a high degree of planning between government and the business sector, as exemplified by the influence of MITI (the Ministry of International Trade and Industry).

Table 2.3 summarises the various ways in which economic systems can be categorised on the basis of the two criteria we are using. Note that the real-world examples we have placed in this framework only approximately fit the assigned categories.

Table 2.3 Comparison of economic systems

Ownership of resources	Coordinating mechanism	
	Market system	Central planning
Private	Australia	Nazi Germany
Public	former Yugoslavia	former Soviet Union (USSR)

THE TRADITIONAL ECONOMY

Table 2.3 is based on terms relating to industrially advanced, or at least semi-developed, economies. Many of the less developed countries of the world have **traditional** or **customary economies** (see Chapter 17). Production methods, exchange and the distribution of income are all sanctioned by custom. Heredity and caste circumscribe the economic roles of individuals, and socioeconomic immobility is pronounced. Technological change and innovation may be closely constrained because they clash with tradition and threaten the social fabric. Economic activity is often secondary to religious and cultural values and society's desire to perpetuate the status quo.

Finally we can say that there are no unique or universally accepted solutions to the five economising problems. Various societies, with their different cultural and historical backgrounds, mores and customs, ideological frameworks and resources (which differ both quantitatively and qualitatively) use different institutions in dealing with the scarcity problem. However, all economies, whatever their accepted goals, ideology, technologies, resources and culture, want to achieve efficiency in the use of their respective resources. The best method for responding to the economising problem in one economy may be inappropriate for another.

Concept highlights

- The term 'isms' is used to refer to the different institutional arrangements regarding ownership and the coordinating mechanisms for economic activity that may be used to respond to the five fundamental questions that constitute the economising problem.
- Laissez-faire capitalism is characterised by private ownership of resources and use of a competitive market system to derive prices that coordinate the allocation of resources and production.
- A command economy is characterised by public ownership of resources and the use of central economic planning to determine resource allocation and production.
- Most advanced economies are mixed systems that combine elements of both laissez-faire capitalism and the command economy system. They range from authoritarian capitalism to market socialism.
- Traditional economies, which are often less developed economies, are characterised by the use of custom to determine the answers to the five fundamental questions.

CHARACTERISTICS OF ADVANCED ECONOMIES

There are certain institutions and practices that are characteristic of all modern or relatively advanced economies. They are:

1. the use of an advanced technology and large amounts of capital goods
2. specialisation
3. the use of money
4. a reliance, albeit limited in some cases, on the market mechanism for the allocation of resources and to guide production decisions.

Advanced technology and specialisation are prerequisites to the efficient employment of any economy's resources. The use of money is a characteristic that facilitates the employment of advanced techniques of production and allows society to more easily practise and reap the benefits of specialisation. Markets provide a relatively efficient, although not always socially acceptable, means for the allocation of resources and products against competing claims.

EXTENSIVE USE OF CAPITAL GOODS

All industrially advanced economies—whether they approximate a capitalist system, or a command system—are based upon an advanced technology and the extensive use of capital goods. Under pure capitalism, it is competition, coupled with freedom of choice and the desire to further self-interest, that provides the means for achieving a rapid rate of technological advance. The capitalistic framework is highly effective in harnessing incentives to develop new products and improved techniques of production, because the monetary rewards that are derived accrue directly to the innovator. Pure capitalism therefore presupposes the extensive use and rapid development of complex capital goods: tools, machinery, large-scale factories and facilities for storage, transport and marketing.

Why are the existence of an advanced technology and the extensive use of capital goods important? Because the most direct method of producing a product

is usually the least efficient. It would be ridiculous for a farmer—even a backyard farmer—to attempt production with bare hands. Using tools of production—that is, capital equipment—to aid in the productive process pays huge dividends in terms of more efficient production and, therefore, a more abundant output. There is a better way of getting water out of a well than diving in after it!

Global SNAPSHOT BUSINESS TAX RATES ACROSS THE GLOBE



One of the main ways for governments to influence the 'for whom' decision is through the tax system, for example through business tax rates. These tax rates vary across the globe, but not generally by as much as might be expected. Although not high by world standards, Australian business tax rates are relatively high within the Asian region.

Country	Corporate tax rate (%, 1 Jan. 1999)
Australia	35.00
Canada	44.60
China	33.00
France	40.00
Germany*	52.31/43.60*
Hong Kong	16.50
India	35.00
Indonesia	30.00
Italy	41.25
Japan	48.00
South Korea	30.80
Malaysia	28.00
New Zealand	33.00
Pakistan	35.00
Philippines	33.00
Singapore	26.00
Taiwan	25.00
Thailand	30.00
United Kingdom	40.00
United States	34.00

SOURCE: KPMG, KPMG Corporate Tax Survey, *January 1999.*

** Germany's dual rates are the corporate tax rates on retained profits and distributed profits, respectively.*

Questions

1. Rank the countries in this list according to the level of the business tax rate, and determine Australia's position within that list. Does Australia have a relatively high business (corporate) tax rate? Explain.
2. What is the average tax rate of the countries in the table? Does Australia's tax rate fall above or below this average? Based on your calculations does Australia have a relatively high business (corporate) tax rate? Does your assessment of Australia's tax rate differ from that in your answer to question 1? How?
3. Does a high corporate tax rate suggest that a country is a high-tax country? What factors do you think might affect this interpretation? Discuss some of these factors.

SPECIALISATION

Society learned long ago that self-sufficiency breeds inefficiency. As was discussed earlier in this chapter, there are two major forms of **specialisation** used to enhance productive efficiency: the division of labour and geographic specialisation.

USE OF MONEY

Virtually all economies, advanced or primitive, are money-using. Money performs a variety of functions, but first and foremost it is a medium of exchange.

If trade between individuals or nations were prohibited for some reason, the gains from specialisation could be lost to society. Consumers want a wide variety of products and, in the absence of trade, would tend to devote their human and material resources to many diverse types of production. If exchange could not occur or was very inconvenient to transact, consumers would be forced to be more self-sufficient. A convenient means of exchanging goods is a prerequisite for specialisation.

Bartering: the exchange of one good or service for another good or service.

Exchange can, and sometimes does, occur on the basis of **bartering**—that is, swapping goods for goods. But bartering as a means of exchange can pose serious problems for the economy. Exchange by barter requires a **coincidence of wants** between the two transactors. For example, assume that Queensland has excess sugar to trade and that it wants to obtain iron. Assume that Western Australia has excess iron to swap and that it wants to acquire sugar. An exchange can occur. But if this coincidence of wants did not exist, trade would be inhibited.

Suppose that Queensland does not want any of Western Australia's iron, but is interested in buying manufactured goods from New South Wales. Suppose that New South Wales wants Western Australia's iron but not Queensland's sugar. And, to complicate matters, suppose that Western Australia wants some of Queensland's sugar but none of New South Wales's manufactured goods. In no case do we find a coincidence of wants. Trade by barter would be difficult.

Money: any item which is generally acceptable to buyers and sellers for facilitating the exchange of goods and services.

To overcome such a stalemate, modern economies use **money**, which is simply a convenient social invention for facilitating the exchange of goods and services. Historically, cattle, cigarettes, shells, stones, pieces of metal and many other diverse commodities have been used, with varying degrees of success, as mediums for facilitating exchange. To be considered as money, an item needs to pass only one important test: it must be generally acceptable to buyers and sellers in exchange. Money is socially defined; it is whatever society accepts as a medium of exchange. Most modern economies find it convenient to use pieces of paper (or paper-like plastic!) as money.

In the situation outlined above involving Queensland, Western Australia and New South Wales, the states use currency called 'dollars' as money. Can the use of dollars as a medium of exchange overcome the stalemate we have posed?

Indeed it can, with trade occurring as follows:

1. Western Australia can exchange money for some of Queensland's sugar.
2. Queensland can take the money realised from the sale of sugar and exchange it for some of New South Wales' manufactured goods.
3. New South Wales can then exchange the money received from the sale of goods for some of Western Australia's surplus of iron.

The willingness to accept paper money (or any other kind of money, for that matter) as a medium of exchange has permitted a three-way trade that allows

each state to specialise in one product and obtain the other product or products its residents desire, despite a non-coincidence of wants. Barter, resting as it does upon a coincidence of wants, would have frustrated this exchange and in so doing would have induced the three states not to specialise. Of course, the efficiencies of specialisation would then have been lost to those states. Strange as it may at first seem, two exchanges—surplus product for money and then money for wanted product—are simpler than the single product-for-product exchange that bartering entails. Indeed, in this example, product-for-product exchange would not be likely to occur at all. Examples such as this demonstrate that money is one of the great social inventions of civilisation!

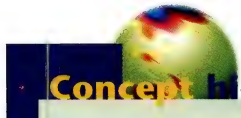
THE ROLE OF MARKETS AND PRICES

The basic coordinating mechanism of a pure capitalist economy is the market or price system. However, this system is used, to a greater or lesser extent, to coordinate some proportion of economic activity in all advanced economies.

Decisions made by the buyers and sellers of products and resources are made effective through a system of markets. The **market system** is an elaborate communication system through which innumerable individual free choices are recorded, summarised and balanced against one another. By definition a **market** is simply a mechanism or arrangement that brings buyers ('demanders') and sellers ('suppliers') of a good or service in contact with one another. The preferences of sellers and buyers are registered on the supply and demand sides of various markets, and the outcome of these choices is a set of product and resource prices. These prices are guideposts at which resource owners, entrepreneurs and consumers make and revise their choices in furthering their self-interests. Those who obey the dictates of the price system are rewarded; those who ignore it are penalised by the system.

Market: a mechanism or arrangement that brings buyers ('demanders') and sellers ('suppliers') of a good or service in contact with one another.

Just as competition is the controlling mechanism, a system of markets and prices provides a basic organising force. Through this communication system, society can make some or all of its decisions concerning the five fundamental economic questions posed earlier. In particular, it can decide what the economy should produce, how production can be efficiently organised, and how the fruits of productive endeavour will be distributed among the individual economic units that make up society.



Concept highlights

The institutions and practices that are characteristic of all relatively advanced economies are:

- the use of an advanced technology and large amounts of capital goods to enhance the productivity of non-capital resources and to reduce the cost of production
- a high level of specialisation of resources, particularly in the division of labour between activities so as to increase productive efficiency
- the use of money as a medium of exchange, which facilitates specialisation by avoiding the need for a mutual coincidence of wants in order for trade to occur
- at least a limited reliance on the market mechanism for the allocation of resources and to guide production decisions.

PRESENT CHOICES AND FUTURE POSSIBILITIES

Concept application

We may use the production possibilities model in this chapter to examine the implications of two important ideas in economics: the rate at which society should choose to invest in its productive capacity versus satisfying its current consumption objectives; and a demonstration of the economic basis for trade between nations.

Given the basic nature of the economising problem, it is evident that, for an economy operating on its production possibilities curve, resources must be diverted from the production of consumer goods in order to be used in the production of capital goods. Society cannot consume all output in any given year if its members wish to consume in the future. We may use the production possibilities model to illustrate the importance of society's choice between current and future consumption for the future wellbeing of its citizens, highlighting the importance of investing for the future.

An economy's current choice of position on its production possibilities curve is a basic determinant of the future location of that curve. Let us designate the two axes of the production possibilities curve as 'goods for the future', or investment goods, and 'goods for the present', as in Figures 2.4(a) and 2.4(b).

By 'goods for the future' we refer to such things as capital goods, research and education, and preventive medicine. An 'investment' in these goods and services leads to an increase in the quantity and quality of property resources, enlarges the stock of technological information and improves the quality of human resources. As we have already seen, these 'goods for the future' are the ingredients of economic growth. By 'goods for the present' we mean pure consumer goods and services in the form of food, clothing, transport and so on.

Now suppose there are two economies, Alphania and Betania, which at the moment are identical in every respect except that Alphania's current (2000) choice of position on its production possibilities curve strongly favours 'present goods' as opposed to 'future goods'. The dot in Figure 2.4(a) indicates this choice. Betania, on the other hand, makes a current (2000) choice that stresses large amounts of 'future goods' and lesser amounts of 'present goods' (Figure 2.4(b)).

Now, all other things being the same, we can expect the future (2018) production possibilities curve of Betania to be further to the right than that of

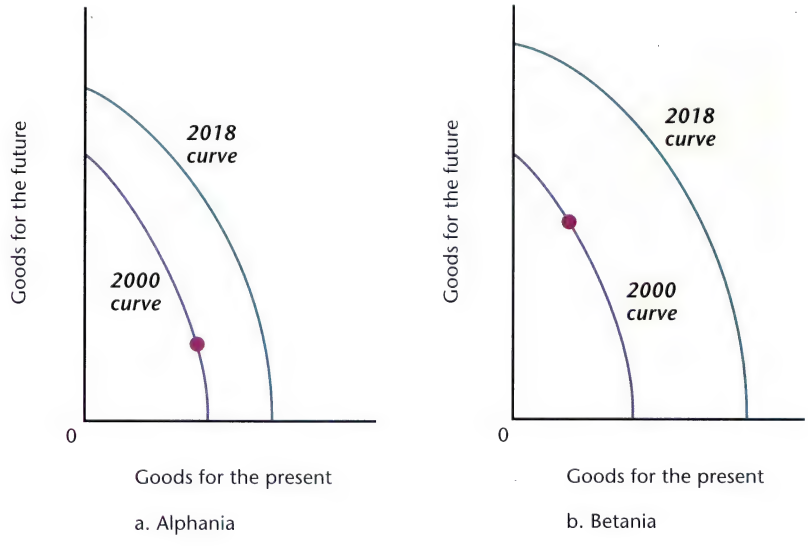


Figure 2.4
An economy's present choice of position on its production possibilities curve helps determine the curve's future location

A current choice favouring 'present goods', as made by Alphania in (a), will cause a modest rightward shift of the curve. A current choice favouring 'future goods', as made by Betania in (b), will result in a greater rightward shift of the curve.

Alphania. By currently choosing an output that is more conducive to technological advance and to increases in the quantity and quality of property and human resources, Betania will tend to achieve greater economic growth than will Alphania. Alphania's current choice of output places less emphasis upon those goods and services that cause the production possibilities curve to shift rightward, thus reducing its growth potential. Thinking solely in terms of capital goods, Betania is choosing to make larger current additions to its 'national factory', that is, to invest more of its current output than Alphania is. The pay-off or benefit from this choice is more rapid growth, and greater future productive capacity, for Betania. Freeing resources for the production of capital goods has increased Betania's productive efficiency substantially over that of Alphania, and permits its society to have a greater output of consumer goods in the future. The cost, of course, is fewer consumer goods and lower levels of consumption for Betania's society in the present.

THE ECONOMIC BASIS FOR TRADE

Why do nations trade? What is the basis for trade between nations? Each of these questions is important and requires our attention. In answering these questions, we will use the concepts of opportunity cost and the production possibilities model to demonstrate the concept of comparative advantage. It is this concept that provides an economic basis for trade between nations.

THE GENERAL CASE FOR TRADE

Stated most generally, international trade is a means by which nations can specialise and thus increase the productivity of their resources. Through such specialisation, nations that trade realise a larger total output than they would otherwise. Sovereign nations, like individuals and regions of a nation, can gain by specialising in those products they can produce with relative efficiency, and trading for those goods and services that they produce relatively inefficiently.

While this rationale for world trade is quite correct, a more sophisticated answer to the question 'Why do nations trade?' hinges on two points. First, the distribution of economic resources—natural, human and capital—among the nations of the world is uneven; nations differ substantially in their endowments of economic resources. Second, the efficient production of various goods and services requires different technologies, or combinations of resources.

The character and interaction of these two points can be readily illustrated. South Korea, for example, has a large and relatively well-educated labour force and moderate amounts of capital equipment, but little land; skilled labour is *relatively* abundant. Hence, South Korea can produce efficiently (at a relatively low cost) a variety of goods whose production requires much skilled labour—cameras, videorecorders and compact disc players are some examples of such *labour-intensive* commodities.

In contrast, Australia has vast amounts of land resources in comparison with its human and capital resources, and hence can produce such *land-intensive* commodities as wheat, wool and meat at a relatively low cost. Similarly, Japan, the United States and other industrially advanced nations are in a strategic position which enables them to produce cheaply a variety of *capital-intensive* goods, for example, cars and machinery.

It is important to emphasise that as national economies evolve, the relative efficiency with which a nation can produce various goods will also change. The size and quality of the national economy's labour forces may change, the volume and composition of its capital stocks may shift, new technologies may develop,

and even the quantity and quality of land and natural resources may be altered. As the international distribution of both resources and technology changes, so too will the relative efficiency with which goods and services can be produced, altering the international pattern of production specialisation.

COMPARATIVE ADVANTAGE

Comparative advantage: the ability to produce a commodity at relatively low opportunity cost in terms of the amount of the alternative commodity forgone.

We will now introduce the concept of **comparative advantage**, and employ it in analysing the basis for international specialisation and trade. We use a highly simplified trade model to reveal most clearly the basic principles involved.

Two isolated nations

Suppose the world economy is composed of just two nations, say, Australia and Taiwan. Assume, further, that each is capable of producing both cereals and clothing, but at differing levels of economic efficiency. To be specific, let us suppose that Australia's and Taiwan's domestic production possibilities curves for cereals and clothing are as shown in Figures 2.5(a) and 2.5(b). Cereals are measured in C units and clothing in K units. Two characteristics of these production possibilities curves must be stressed.

Constant costs

For simplicity we have drawn the production possibility 'curves' as straight lines, in contrast to the concave-from-the-origin type of production possibilities boundaries introduced earlier in this chapter. That is, we have in effect replaced the law of increasing costs with the assumption of constant costs.

This simplification will greatly facilitate our discussion. With increasing costs, the comparative costs of the two nations involved in producing cereals and clothing would now vary with the amounts produced, and comparative advantages might even change.

The assumption of constant cost permits us to complete our entire analysis without having to shift to different opportunity-cost ratios with every variation in output. The constant-cost assumption will not seriously impair the validity of our analysis and conclusions. We shall look later in our discussion at the effect of the more realistic assumption of increasing costs.

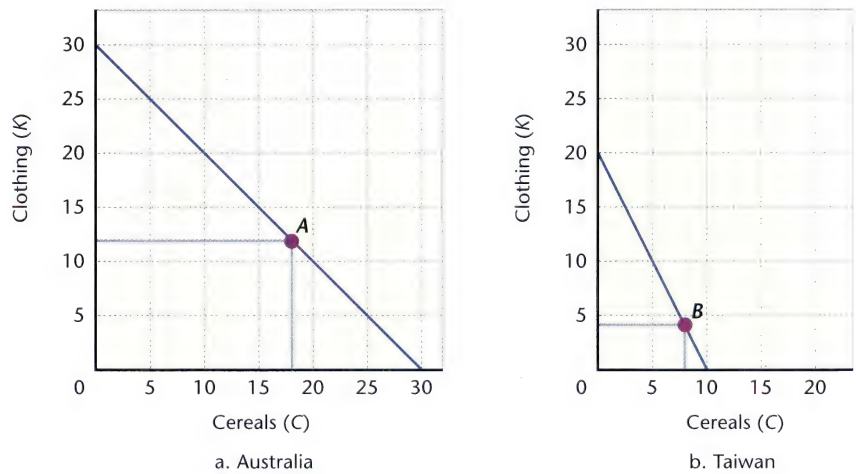


Figure 2.5
Production possibilities for Australia and Taiwan

The two production possibilities lines show the amounts of clothing and cereal that Australia, in (a), and Taiwan, in (b), can produce domestically. The production possibilities for both countries are straight lines because we are assuming constant costs. The different cost ratios $1K = 1C$ for Australia and $1C = 2K$ for Taiwan are reflected in the different slopes of the two lines.

Different opportunity costs

The production possibilities lines of Australia and Taiwan are obviously different, reflecting different resource mixes and different levels of technological progress. More specifically, the opportunity costs of producing clothing and cereals differ between the two nations. We note in Figure 2.5(a) that, under full employment, Australia can increase output of clothing by 1*K* when 1*C* of cereal output is forgone. That is to say, in Australia the domestic exchange ratio, or **cost ratio**, for the two products is 1*K* of clothing for 1*C* of cereal, or simply 1*C* = 1*K*. Australia, in effect, can 'exchange' 1*K* of clothing for 1*C* of cereal domestically by shifting resources from cereals to clothing.

Cost ratio: the rate at which we can exchange production of additional units of one commodity for another commodity. This is the 'opportunity cost of production' of the commodity and reflects the movement of resources between the two sectors.

Our constant-cost assumption means that this exchange or cost ratio prevails for all possible shifts on Australia's production possibilities curve. Taiwan's production possibilities line in Figure 2.5(b) reveals a different exchange or cost ratio. In Taiwan the domestic cost ratio for the two goods is 1*C* of cereal for 2*K* of clothing, or 1*C* = 2*K*.

Self-sufficiency

If Australia and Taiwan are isolated and therefore self-sufficient, each must choose some output mix on its production possibilities line.

Let us assume that point *A* in Figure 2.5(a), the combination of 18*C* of cereal and 12*K*, is regarded as the optimum output mix in Australia. Suppose Taiwan's optimum product mix is 8*C* of cereal and 4*K* of clothing, as indicated by point *B* in Figure 2.5(b). These choices are also reflected in column 2 of Table 2.4.

Table 2.4 International specialisation according to comparative advantage and the gains from trade (hypothetical data, in physical units)

Country	Outputs before specialisation	Outputs after specialisation	Amounts exported (−) and imported (+)	Outputs available after trade	Gains from specialisation and trade
Australia	18 cereal 12 clothes	30 cereal 0 clothes	−10 cereal +15 clothes	20 cereal 15 clothes	2 cereal 3 clothes
Taiwan	8 cereal 4 clothes	0 cereal 20 clothes	+10 cereal −15 clothes	10 cereal 5 clothes	2 cereal 1 clothes

SPECIALISATION ACCORDING TO COMPARATIVE ADVANTAGE

Given these different opportunity-cost ratios, is there any rule that tells us in which products Australia and Taiwan should specialise? Yes: the **principle of comparative advantage** says that total output will be greatest when each good is produced by that nation that has the lower opportunity cost.

For our illustration, Australia's opportunity cost is lower for cereal. That is, Australia need only forgo 1*K* of clothing to produce 1*C* of cereal, whereas Taiwan must forgo 2*K* of clothing for 1*C* of cereal. Australia, therefore, has a *comparative (cost) advantage* in cereal, and it should specialise in cereal production. The 'world' (Australia and Taiwan) is obviously not economising in the use of its resources if a given product (cereal) is produced by a high-cost producer (Taiwan) when it could have been produced by a low-cost producer (Australia). To have Taiwan produce cereal would mean that the world economy would have to give up more clothing than is necessary to obtain cereal.

Principle of comparative advantage: that nations should specialise in the production of those goods and services in which they have a comparative advantage, allowing an increase in consumption possibilities through trade and specialisation.

Conversely, Taiwan's opportunity cost is lower for clothing; that is, Taiwan must sacrifice only $0.5C$ of cereal to produce $1K$ of clothing, whereas Australia must forgo $1C$ of cereal to produce $1K$ of clothing. Taiwan has a *comparative advantage* in clothing, and therefore it should specialise in clothing production. Again, the world would not be employing its resources economically if clothes were produced by a high-cost producer (Australia) rather than a low-cost producer (Taiwan). If Australia produced clothing, the world would be giving up more cereal than would be necessary to obtain $1K$ of clothing.

Economising—using given quantities of scarce resources so as to obtain the greatest total output—requires any particular good to be produced by that nation that has the lower opportunity cost, that is, the comparative advantage. In our illustration, Australia should produce cereal and Taiwan should produce clothing.

By looking at column 2 of Table 2.4, we can quickly verify that specialised production in accordance with the principle of comparative advantage does, indeed, allow the world to get more output from given amounts of resources. By specialising completely in cereals, Australia can produce $30C$ of cereals and no clothing. Similarly, by specialising completely in clothing, Taiwan produces $20K$ of clothing and no cereal. We note that the world has more cereals ($30C$ compared with $26C$ ($= (18 + 8)C$) and more clothing ($20K$ compared with $16K$ ($= (12 + 4)K$) than in the case of self-sufficiency and unspecialised production.

THE TERMS OF TRADE

Commodity terms of trade: the rate at which one commodity can be exchanged for another expressed in physical units of each commodity.

The consumers of each nation want both cereals and clothing. Specialisation implies the need to trade or exchange the two products. What will be the **commodity terms of trade**? That is, at what exchange ratio will Australia and Taiwan trade cereal and clothing?

We know that because $1C = 1K$ in Australia, Australia must obtain *more than* $1K$ of clothing for each $1C$ of cereal exported, or it will not be worthwhile for Australia to export cereals in exchange for Taiwanese clothing. That is, Australia must receive a better price (more clothing) for its cereals in the world market than it can obtain domestically, or else trade is not advantageous. Similarly, because $1C = 2K$ in Taiwan, we know that Taiwan must be able to obtain $1C$ of cereal by exporting an amount of *less than* $2K$ of clothing. Taiwan must be able to pay a lower price for cereal in the world market than it must pay domestically, or it will not wish to engage in international trade. Thus we can be certain that the international exchange ratio or commodity terms of trade must lie somewhere between

$$1C = 1K$$

and

$$1C = 2K$$

But where will the actual world exchange ratio fall between the $1C = 1K$ limit (determined by cost conditions in Australia) and the $1C = 2K$ limit (determined by cost conditions in Taiwan)? This question is crucial because the exchange ratio determines how the gains from international specialisation and trade are divided among the two nations. Obviously, Australia prefers a rate close to that of $1C = 2K$, say $1C = 1.75K$. Australia wants to receive a great deal of clothing for each $1C$ of cereal it exports. Similarly, Taiwan desires a rate of approximately $1C = 1K$, say $1C = 1.25K$. Taiwan wants to export as little clothing as possible for each $1C$ of cereal it receives in exchange.

The actual exchange ratio that will materialise between the two limits depends largely upon the world supply and demand conditions for the two products. The preferences of consumers in Australia and Taiwan determine demand for each

product, while the production constraints imposed by the production possibility frontiers of the two countries determine the supply of each product. If the overall demand for clothing is weak relative to its supply, and the demand for cereals is strong relative to its supply, the price of clothing will be low and that of cereals high. The exchange ratio will settle near the $1C = 2K$ figure preferred by Australia. Under the opposite supply and demand conditions, the ratio will settle near the $1C = 1K$ level more favourable to Taiwan.

THE GAINS FROM TRADE

Gains from trade: increases in consumption of goods and services through the efficient allocation of resources and international exchange.

Trading possibilities line: a line showing the rate at which one commodity can be exchanged for another during international trade. The slope reflects the international commodity terms of trade.

Let us suppose that the international exchange ratio or commodity terms of trade is actually $1C = 1.5K$. The possibility of trading on these terms permits each nation to supplement its domestic production possibilities line with a **trading possibilities line**. This can be seen in Figure 2.6. Just as a production possibilities line shows the options that a full-employment economy has in producing one product by shifting resources from the production of another, so a trading possibilities line shows the options that a nation has by specialising in one product and trading (exporting) its specialty to obtain the other product.

The trading possibilities lines in Figures 2.6(a) and 2.6(b) are drawn on the assumption that both nations specialise in accordance with comparative advantage and that Australia therefore specialises completely in cereals (point S in Figure 2.6(a)) and Taiwan completely in clothing (point d in Figure 2.6(b)).

Now Australia is no longer constrained by its domestic production possibilities line. It does not have to give up $1C$ of cereal for every $1K$ of clothing it wants (by moving up its domestic production possibilities line from point S). Instead it can, through trade with Taiwan, get $1.5K$ of clothing for every $1C$ of cereal it exports to Taiwan (it moves up the trading line SE').

Similarly, we can think of Taiwan as starting at point d. Instead of having to move down its domestic production possibilities line, thereby having to give up $2K$ of clothing for each $1C$ of cereal it wants, it can now export just $1.5K$ of clothing for each $1C$ of cereal it wants (moving down its ds' trading possibilities line).

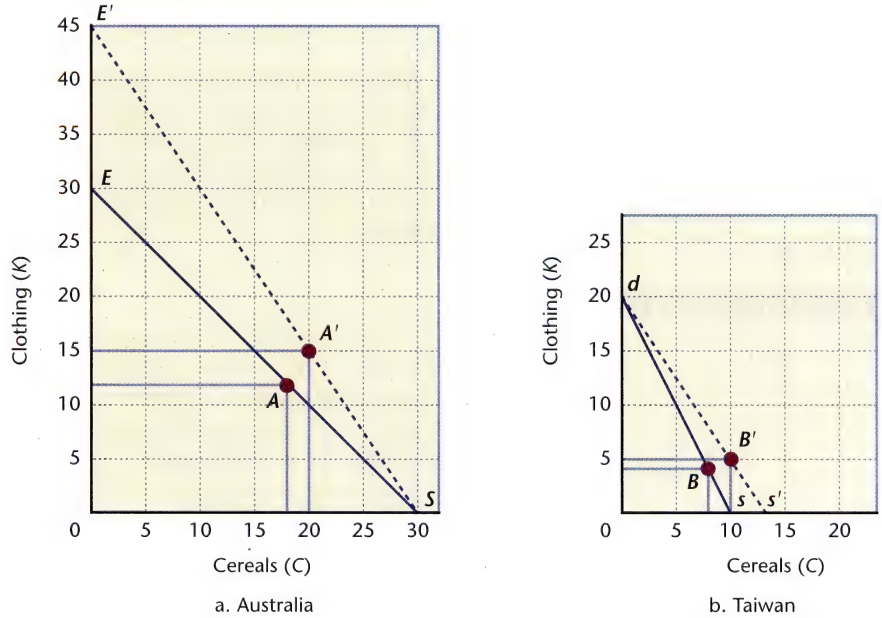


Figure 2.6
Trading possibilities lines and the gains from trade

As a result of international specialisation and trade, Australia and Taiwan can both realise levels of output superior to those attainable on their domestic production possibilities curves. For example, Australia, in (a), can move from point A on its domestic production possibilities line to point A' on its trading possibilities line; similarly, Taiwan, in (b), can move from B to B'.

Specialisation and trade give rise to a new exchange ratio between cereals and clothing that is reflected in a nation's trading possibilities line. This new exchange ratio is superior, for both nations, to the self-sufficiency exchange ratio embodied in each nation's production possibilities line. By specialising in cereals, and trading for Taiwan's clothing, Australia can obtain more than 1*K* of clothing for 1*C* of cereal. Similarly, by specialising in clothing, and trading for Australia's cereals, Taiwan can obtain 1*C* of cereal for less than 2*K* of clothing.

The crucial fact to note is that, by specialising according to comparative advantage and trading for those goods that they can produce at home with relatively less efficiency, both Australia and Taiwan can realise combinations of cereals and clothing that lie beyond their production possibilities boundaries. Specialisation according to comparative advantage results in a more efficient allocation of world resources, and larger outputs of both cereals and clothing are therefore available to Australia and Taiwan.

To be more specific, suppose that, at the 1*C* = 1.5*K* commodity terms of trade, Australia exports 10*C* of cereals to Taiwan, and Taiwan in return exports 15*K* of clothing to Australia. How do the new quantities of cereals and clothing available to the two nations compare with the optimum product mixes that existed before specialisation and trade?

Point *A* in Figure 2.6(a) reminds us that Australia originally chose 18*C* of cereals and 12*K* of clothing. Now, by producing 30*C* of cereals and no clothing, and by trading 10*C* of cereals for 15*K* of clothing, Australia can enjoy 20*C* of cereals and 15*K* of clothing. This new, superior combination of cereals and clothing is shown by point *A′* in Figure 2.6(a). Compared with the non-trading figures of 18*C* of cereals and 12*K* of clothing, Australia's gains from trade are 2*C* of cereal and 3*K* of clothing.

Similarly, we assumed that Taiwan's optimum product mix was 4*K* of clothing and 8*C* of cereals (point *B*) before specialisation and trade. Now, by specialising in clothing and thereby producing 20*K* of clothing and no cereals, Taiwan can realise a combination of 5*K* of clothing and 10*C* of cereals by exporting 15*K* of its clothing in exchange for 10*C* of Australian cereals. This new position is shown by point *B′* in Figure 2.6(b). Taiwan's gains from trade are 1*K* of clothing and 2*C* of cereals. As a result of specialisation and trade, both countries have more of both products. Table 2.4 is a summary statement of all these figures and merits your careful study.

The fact that points *A′* and *B′* are positions superior to *A* and *B* is extremely important. We have now discovered a third means—international trade—by which a nation can circumvent the output constraints imposed by its production possibilities curve. The effects of international specialisation and trade are equivalent to having more and better resources, or discovering improved production techniques.

INCREASING COSTS

In formulating a straightforward statement of the principles underlying international trade, we have used a number of simplifying assumptions. Our discussion was purposely limited to two products and two nations in order to minimise the length of our argument; however, multi-nation and multi-product examples would yield similar conclusions. The assumption of constant costs, on the other hand, is a more substantive simplification. Let us therefore pause to consider the significance of increasing costs (concave-from-the-origin production possibility curves) for our analysis. Figure 2.7 illustrates this case.

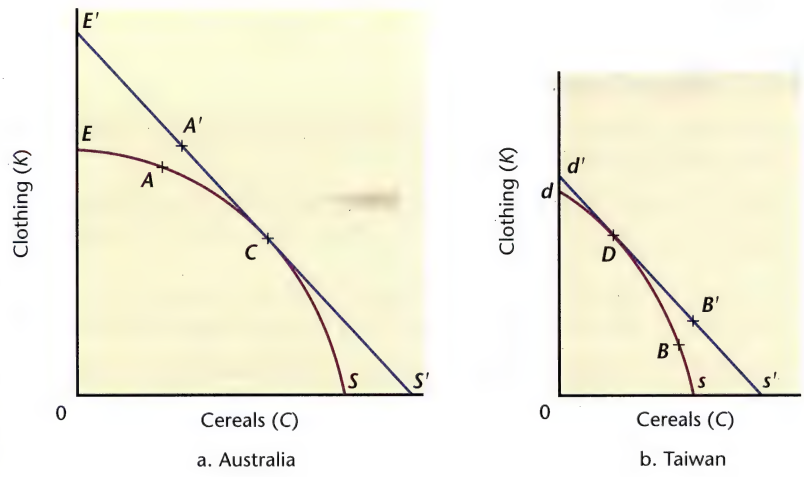


Figure 2.7
The gains from trade under increasing costs

In the presence of increasing costs, international specialisation, although increased through free trade, is not complete. As under constant costs, Australia and Taiwan can both realise levels of output superior to those attainable on their domestic production possibilities curves. For example, Australia, in (a), can move from point *A* on its domestic production possibilities line to point *A'* on its trading possibilities line by producing at point *C* and engaging in free trade. Similarly, Taiwan, in (b), can move from *B* to *B'* by producing at point *D* and engaging in free trade with Australia.

Suppose that Australia and Taiwan are at positions on their production possibilities curves where their cost ratios are initially $1C = 1K$ and $1C = 2K$ respectively (points *A* and *B* in Figures 2.7(a) and 2.7(b)). You will recall that the slope of the production possibilities curve is the same as that of the tangent to the curve at the particular point of interest (see the Appendix to Chapter 1). As before, comparative advantage indicates that Australia should specialise in cereals and Taiwan in clothing. But now, as Australia begins to expand its cereal production, its $1C = 1K$ cost ratio rises as it moves from left to right around its production possibilities curve; that is, it has to sacrifice more than $1K$ of clothing to get an additional $1C$ of cereals. Resources are no longer perfectly shiftable between alternative uses, as the constant-cost assumption implied. Resources less and less suitable to cereal production must be allocated to the Australian cereal industry to expand cereal output, and this means increasing costs; that is, the sacrifice of larger and larger amounts of clothing for each additional gram of cereals. Similarly, Taiwan, starting from its $1C = 2K$ cost ratio position, expands clothing production. But as it does, it finds that its $1C = 2K$ cost ratio begins to fall as it moves from right to left around its production possibilities curve. Sacrificing $1C$ of cereal frees resources that are only capable of producing something less than $2K$ of clothing, because the transferred resources are less suitable to clothing production.

Hence, as the Australian cost ratio rises from $1C = 1K$ and Taiwan's falls from $1C = 2K$, a point may be reached at which the cost ratios are equal in the two nations; for example, at $1C = 1.5K$ (points *C* and *D* in Figures 2.7(a) and 2.7(b)). At this point, the underlying basis for further specialisation and trade—*differing opportunity cost ratios*—has obviously disappeared, and further specialisation is uneconomic. And, most importantly, this point of equal cost ratios is realised where Australia is still producing some clothing along with its cereals (point *C* in Figure 2.7(a)) and Taiwan is producing some cereals along with its clothing (point *D* in Figure 2.7(b)). The primary effect of increasing costs is to make specialisation less than complete.

Concept highlights

- Society's choice about the composition of current output is a determinant of the future location of its production possibilities curve.
- A choice of a greater amount of 'goods for the future', or investment goods and services, will lead to a production possibility curve that is further to the right in the future; a greater rate of economic growth will have occurred.
- Choosing to produce relatively more 'goods for the present', or consumption goods and services, will lead to a lower level of economic growth over a given period.
- World trade is ultimately based upon two considerations: the uneven distribution of economic resources among nations; and the fact that the efficient production of various goods requires particular techniques or combinations of resources.
- Mutually advantageous specialisation and trade are possible between any two nations as long as the opportunity cost ratios for any two products differ. By specialising according to comparative advantage, nations can realise larger real incomes with fixed amounts of resources.
- The commodity terms of trade determine how any increase in world output brought about by specialisation is shared by the trading nations.
- Increasing costs impose limits upon the gains from specialisation and trade.

SUMMARY

1 Economics centres upon two basic facts. First, human material wants are virtually unlimited; they can never be completely satisfied in total. Second, economic resources are scarce; that is, their supplies are limited or finite.

2 Economic resources may be classified as property resources—raw materials and capital—or as human resources—labour and entrepreneurial ability.

3 Economics is concerned with the problem of administering scarce resources in the production of goods and services for the fulfilment of the material wants of society. Both the full employment and the full production of available resources are essential if this administration is to be efficient.

4 Full production involves productive efficiency (least-cost production) and allocative efficiency (the production of society's most desired output combination).

5 At any time, a full-employment, full-production economy must sacrifice the output of some types of goods and services to achieve the increased production of others. Because resources are not equally productive in all possible uses, the shifting of resources from one use to another is subject to the law of increasing opportunity costs; in other words, the production of additional units of product *X* entails the sacrifice of increasing amounts of product *Y*.

6 Allocative efficiency means attaining the optimal (most desired) point on the production possibilities curve.

7 Over time, technological advances and increases in the quantity and quality of human and property resources permit the economy to produce more of all goods and services. Society's choice about the composition of current output is a determinant of the future location of the production possibilities curve.

8 The following five fundamental questions are an elaboration of the economising problem:

- How much total output should society produce?
- What combination of outputs is to be produced?
- How are these outputs to be produced?
- Who is to receive and consume these outputs?
- How can the system adapt to change?

9 The various economic systems of the world differ in their ideologies and also in their responses to the economising problem. Critical differences centre upon:

- private versus public ownership of resources
- the use of the market system versus central planning as a coordinating mechanism.

10 Specialisation, advanced technology based on the extensive use of capital goods, the use of money and the use of the market mechanism to coordinate at least some part of the economic allocation of resources are features common to all modern economies.

11 Functioning as a medium of exchange, money overcomes the problems entailed in bartering and, therefore, permits greater specialisation.

12 World trade is ultimately based upon two considerations: the uneven distribution of economic resources among nations; and the fact that the efficient production of various goods requires particular techniques or combinations of resources.

13 Mutually advantageous specialisation and trade are possible between any two nations as long as the cost ratios for any two products differ. By specialising according to comparative advantage, nations can realise larger real incomes with fixed amounts of resources.

14 The commodity terms of trade determine how this increase in world output brought about through specialisation and trade is shared by the trading nations.

15 Increasing costs impose limits upon the gains from specialisation and trade, leading to incomplete specialisation in production.

KEY TERMS *and* CONCEPTS *to remember*



allocative efficiency	39	consumer goods	40
authoritarian capitalism	51	cost ratio	59
bartering	54	division of labour	39
capital goods	40	economic growth	46
coincidence of wants	54	economic resources	35
command economy	50	economising problem	34
commodity terms of trade	60	efficiency	38
comparative advantage	58	the five fundamental questions	47

full employment 38
full production 39
gains from trade 61
investment 36
labour- (land-, capital-) intensive commodity 37
laissez-faire capitalism 49
land, capital, labour and entrepreneurial ability 36–37
law of increasing opportunity costs 43
market 55
market socialism 51
market system 55
material wants 34
money 54
opportunity cost 42
principle of comparative advantage 59
production possibilities table (curve) 41
productive efficiency 39
specialisation 54
trading possibilities line 61
traditional economy 51
utility 34

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What facts constitute the economising problem?

2 'Economics is the study of the principles governing the allocation of scarce means among competing ends when the objective of the allocation is to maximise the attainment of the ends.' Explain.

3 What are economic resources? Give some examples of each type of economic resource.

4 What are the major characteristics of the entrepreneur?

5 Distinguish between allocative efficiency and productive efficiency. Give an illustration of:

(a) achieving allocative, but not productive, efficiency

(b) achieving productive, but not allocative, efficiency.

6 Upon what assumptions is the production possibility curve based?

7 **(a)** What do the points on the production possibility curve indicate?

(b) What do the points inside the production possibility curve indicate?

8 How does the production possibility curve reflect the law of increasing opportunity costs?

9 Why is the problem of unemployment a part of the subject matter of economics?

10 Describe the different means by which pure capitalism, market socialism and a command economy attempt to confront the economising problem.

11 What are the advantages of specialisation in the use of human and material resources? (Be specific.)

12 What problems does barter involve?

13 What is the economic significance of money as a medium of exchange?

14 What is the opportunity cost of attending university?

15 'The present choice of position on the production possibilities curve is a major factor in economic growth.' Explain.

16 'Australia can produce product *X* more efficiently than Singapore can. Yet we import *X* from Singapore.' Explain.

Problems & exercises

Here is a production possibilities table for war goods and civilian goods.

Type of product	Production alternatives				
	A	*B*	*C*	*D*	*E*
Cars (in millions)	0	2	4	6	8
Guided missiles (in thousands)	30	27	21	12	0

1 Graph the data in the table.

2 If the economy is currently at point *C*:

(a) What is the cost of one million more cars?

(b) What is the cost of one thousand more guided missiles?

3 Label point *G* inside the curve in question 1. What does it indicate?

4 **(a)** Label a point *H* that lies outside the production possibilities curve of question 1.

(b) What does this point indicate?

(c) What must occur before the economy can attain the level of production indicated by point *H*?

5 Suppose improvement occurs in the technology of producing guided missiles but not in the production of cars.

(a) Draw the new production possibilities curve on the diagram that you created in response to question 1.

(b) Now draw a curve that reflects technological improvement in the production of both products.

6 **(a)** Create a three-dimensional (3-D) production possibilities surface using the data in the following table (a computer spreadsheet will be useful).

Type of product	Production alternatives						
	A	*B*	*C*	*D*	*E*	*F*	*G*
Robots (in hundreds)	0	2	0	1	3	5	7
CD players (in thousands)	0	20	35	30	20	10	0
Industrial diamonds (in thousands)	30	16	0	12	15	11	0

(b) What is the significance of points *A*, *C* and *G*? Explain in terms of the 'economising problem'.

7 Assume that, by using all its resources to produce X, nation A can produce 80 units of X; by devoting all its resources to Y, it can produce 40 units of Y. Comparable figures for nation B are 60 units of X and 60 units of Y.

(a) Assuming constant costs, in which product should each nation specialise? Why?

(b) Indicate the limits of the terms of trade.

8 The following are production possibilities tables for Japan and Hawaii. Assume that, prior to specialisation and trade, the optimum product mix for Japan is alternative B, and for Hawaii alternative D.

Japan's production alternatives

	A	B	C	D	E	F
Radios (in thousands)	30	24	18	12	6	0
Pineapples (in tonnes)	0	6	12	18	24	30

Hawaii's production alternatives

	A	B	C	D	E	F
Radios (in thousands)	10	8	6	4	2	0
Pineapples (in tonnes)	0	4	8	12	16	20

(a) Are comparative cost conditions such that the two nations should specialise? If so, what product should each produce?

(b) What is the total gain in radio and pineapple output that results from specialisation?

(c) What are the limits of trade?

(d) Suppose that the actual terms of trade are 1 unit of radios for 1.5 units of pineapples, and that 4 units of radios are exchanged for 6 units of pineapples. What are the gains from specialisation and trade for each nation?

(e) Can you conclude from this illustration that specialisation according to comparative advantage results in the more efficient use of world resources? Explain.



1 Critically analyse and explain the following statements:

(a) 'Wants aren't insatiable. I can prove it. I get all the coffee I want to drink every morning at breakfast.'

(b) 'Goods and services are scarce because resources are scarce.'

(c) 'It is the nature of all economic problems that absolute solutions are denied us.'

2 Comment on the following statement from a newspaper: 'Our high school serves a splendid hot meal for a dollar without costing the taxpayers anything, thanks in part to a government subsidy.'

3 Explain this statement: 'Money is the only commodity that is good for nothing but to be gotten rid of. It will not feed you, clothe you, shelter you, or amuse you unless you spend or invest it. It imparts value only in parting.'[1]

4 To gain an idea of the importance of government in the total economy, visit the World Bank website and check the data on government expenditures relative to GDP (the value of national output of goods and services). You can find the site at:
http://www.worldbank.org/

NOTES

1 Federal Reserve Bank of Philadelphia, 'Creeping Inflation', *Business Review*, August 1957, p. 3.



A LAST WORD ENTERPRISE? TAX IT

Some economies do not neatly fit our descriptions of the 'isms' but, like Cuba, are in a confused transition between models.

Ernesto is a waiter in one of Havana's small restaurants, or paladares. With tips, he makes $120 or so a month, 13 times the average wage. He spends a lot of it eating out; he buys smart clothes; and on days when the paladar is closed, he runs his newly bought car as an illegal taxi, to earn more. Havana has become quite a decent place to live in these days, for those with dollars. So, for such lucky folk, the government is trying to make it less decent. Ernesto's money is small potatoes compared with that of jiniteros—prostitutes, black marketeers and street hustlers—people with generous relations in Miami, with thriving small businesses, or, notably, with rooms to let to tourists. Cuba's top tax rate starts at $60 000 a year, and there are people who earn enough to be paying it ... The government has yielded a little to market forces. It now allows foreigners 100% ownership of businesses, and has set up free zones where these pay neither import duties nor (for 12 years) taxes on labour and utilities. The paladares and farmers' markets are, within limits, legal. But Fidel Castro hates the result. Foreign investment he calls a 'necessary evil' and temporary at that: 'These properties can be recovered within 50 or 100 years.' He dislikes the new rich: 'None of us sheds a tear because there are no millionaires in Cuba.'

So the self-employed and other dollar-earners face both political pressure and increasing taxation. Laws change overnight. 'The police raided us at six in the morning, confiscating equipment. We only read of a change in the law in that morning's paper,' says a former ice-cream seller. One Havana paladar was closed for entertaining too many diplomats and creating too much competition for nearby state restaurants.

A new law just brought into force legalises the letting of rooms or flats to foreigners (if their names are registered with the authorities), but also taxes it: up to $200 a month per room, and extra for bathrooms, kitchens, even passageways, let alone gardens and swimming pools. This will make letting unprofitable for many, since a room typically brings in only $10 a night, and the tax is due by the month even if the letting is just for one night. Many landlords say they will give up, since they will have to charge as much as the cheaper hotels. That may be the government's aim: those who let rooms were recently branded 'disloyal' in the party newspaper Granma, which accused them of depriving state-owned hotels of hard currency. Prostitution may be another target; a crackdown has driven it from hotels into private homes.

Despite a flood of media time spent—in advance, for once—justifying it, the new tax has angered the middle classes, normally unhappy but resigned. Letting rooms is the main way to earn dollars for those without relations in exile or the means to start a business. The law has already hit shop and restaurant takings. One woman, usually a staunch supporter of Mr Castro, complains of this constant aggression against people who are just trying to stay alive. To another, 'The message is clear. Cubans are not allowed to get ahead. Our government hates people who make money.'

SOURCE: Economist, *5 July 1997, p. 36.*

Questions

1. Where would you place Cuba in the matrix suggested in Table 2.3? On what basis would you do this?
2. Based on your reading of the article, under which of the different 'isms' is each of the five fundamental questions being answered in Cuba? Is this likely to cause conflict in the consistent setting of government policy objectives?
3. Cuba's top tax rate is payable by individuals earning US$60 000 or more a year. In Australia, at the time of writing, our top tax rate started at the equivalent of US$32 700 (A$50 001). Does this suggest that the Australian government is more interventionist than that in Cuba? What evidence is there in the article to support your viewpoint?
4. What recent actions mentioned in the article are consistent with the command or communist economy?
5. What impact are the changes to regulations on renting rooms having on incentives in the Cuban economy? What impact is this likely to have on economic efficiency in Cuba?



Chapter 3 DEMAND AND SUPPLY

INTRODUCTION

Chapter 2 introduced you to the economising problem in detail, and broke it into five fundamental questions. As also discussed in Chapter 2, markets—through supply and demand forces—provide one method by which society can answer the questions how much to produce, what product combination to make, how to produce at least cost, for whom to produce and how to get the system to adapt to change. But before we study how the market can help us to answer these questions, we need to develop the concepts of demand and supply in detail.

You may have read or heard something like the following: 'Teach a parrot to say, "Demand and supply", and you have an economist!' Although more than just the ability to use the words is required, the importance of demand and supply to economic analysis cannot be overstated. As we will demonstrate, the simple tools of demand and supply can help us understand not only specific economic issues, but also the operation of the entire economic system.

LEARNING OBJECTIVES

- **Examine the nature of markets.**
- **Carefully develop the concepts of demand and supply.**
- **Discuss the separate factors that lead to shifts in the demand and supply curves.**
- **Explain how prices and output are determined in both the product and resource markets through the interaction of demand and supply.**
- **Discuss the rationing function of prices, and their role in resource allocation.**
- **Apply the concepts of demand and supply to the determination of the equilibrium exchange rate between nations' currencies.**

MARKETS DEFINED

As defined in Chapter 2, a market is an institutional structure, or mechanism, that brings together buyers ('demanders' or 'consumers') and sellers ('suppliers') of particular goods and services.

Markets exist in many forms. The local petrol station, the fast-food outlet, the suburban CD store, and a fruit-seller's roadside stand are all familiar markets. A stock exchange is a highly sophisticated set of markets where buyers and sellers of shares from all over the world are brought into contact with one another. Similarly, auctions bring together potential buyers and sellers of artworks, livestock, used farm equipment and real estate. Star footballers and their agents bargain with the management of a team. A graduating accountancy student has an interview with one of the major accountancy firms at a university careers office. All these situations that link potential buyers with potential sellers constitute markets. As our examples imply, some markets are local, while others are national or international. Some are highly personal, involving face-to-face contact between demander and supplier; others are impersonal, because the buyer and seller never see or know one another.

This chapter is concerned with describing and exploring the functioning of **perfectly competitive markets**. Such markets presume large numbers of independently acting buyers and sellers interested in exchanging a standardised product. The kind of markets that we have in mind are not the CD store or local petrol station, where products have price tags on them, but highly competitive markets. Examples of perfectly competitive markets include the central livestock auction and the stock market, where the equilibrium price is 'discovered' through the interacting decisions of buyers and sellers.



Concept highlights

- A market is any institutional structure, or 'mechanism' that links potential buyers with potential sellers.
- Markets may take many forms: local, national, or international in scope; highly personal, involving face-to-face contact between demander and supplier; or impersonal, because the buyer and seller never meet.

DEMAND

Demand is defined as a schedule that shows the amounts of a product that consumers are willing and able to purchase at each specific price in a set of possible prices during some specified period of time.[1] Demand shows a series of alternative possibilities that can be written down in tabular form. It shows the quantities of a product that will be demanded at various prices, all other things being equal.

We usually view demand from the vantage point of price; that is, we read demand as showing the amounts consumers will buy at various possible prices. But it is equally correct and sometimes even more useful to view demand from the reference point of quantity. Instead of asking what quantities can be sold at various prices, we can ask what prices can be obtained from consumers for various quantities of a good. Table 3.1 is a hypothetical **demand schedule** for a single consumer who is purchasing units of product *X*.

Table 3.1 An individual buyer's demand for product *X*

Price per unit ($)	Quantity demanded per week
5	10
4	20
3	35
2	55
1	80

This tabular information about demand reflects the relationship between the price of *X* and the quantity that our mythical consumer would be willing and able to purchase at each of these prices. Note that we say 'willing and able', because willingness alone is not effective in the market. I may be willing to buy a BMW car, but if this willingness is not backed by the ability to buy— that is, by access to the necessary dollars—it is not effective and, therefore, not reflected in the market. In Table 3.1, if the price of *X* in the market happened to be $5 per unit, our consumer would be willing and able to buy 10 units per week; if it were $4, the consumer would be willing and able to buy 20 units per week and so on.

The demand schedule does not itself tell us which of the five possible prices will actually exist in the *X* market. As we have already said, this depends on demand and supply. Demand, then, is simply a tabular statement of a buyer's plans, or intentions, with respect to the purchase of a product.

To be meaningful, the quantities demanded at each price must relate to some specific time period—a day, a week, a month, and so on. To say that 'a consumer will buy 10 units of *X* at $5 per unit' is vague. To say that 'a consumer will buy 10 units of *X per week* at $5 per unit' is very clear.

LAW OF DEMAND

Law of demand: the inverse relationship between the price and the quantity demanded of a good or service during some period of time.

A fundamental characteristic of demand is that, if price falls and all else remains constant, the corresponding quantity demanded rises. Alternatively, as price increases, the corresponding *quantity demanded* falls. In short, there is a negative or inverse relationship between price and quantity demanded. Economists have labelled this inverse relationship the **law of demand**.

The 'other things being equal or constant' assumption (outlined in Chapter 1) is crucial here. Many other things affect the amount purchased: for example, the buyer's income or the prices of other goods. By assuming for the moment that all variables, other than the price of the good, are constant, we have isolated a very particular relationship. If the price of *X* (and only the price) changes, then the quantity demanded will, in response, change in the opposite direction.

Upon what foundations does this law rest? There are many levels on which the case can be argued.

1 Commonsense and simple observation are consistent with the law of demand. People normally *do* buy more of a product at a low price than they do at a high price. To consumers, price is an obstacle that deters them from buying. The higher this obstacle, the less of a product they buy; the lower the price obstacle, the more they buy. In other words, a high price discourages consumers from buying and a low price encourages them to buy. The plain fact that retail businesses, for example, have annual or seasonal 'sales' is concrete evidence of their belief in the law of demand. 'Sales days' are based on the law of demand.

2 In any given period, each buyer of a product derives less satisfaction or benefit or 'utility' from each successive unit of a product consumed. For example, a second hamburger may yield less satisfaction than the first, the third less than the second, and so on. Hence, because consumption is subject to **diminishing marginal utility**—that is, the fact that successive units of a given product yield less and less extra satisfaction—consumers buy additional units only if price is reduced.

3 The law of demand can also be explained in terms of the income and substitution effects. The **income effect** states that, at a lower price, we can afford more of a product without giving up other goods. In other words, a decline in price increases the purchasing power of our money income, so we are able to buy more of a product than before. A higher price has the opposite effect. The **substitution effect** suggests that, at a lower price, we have the incentive to substitute the cheaper good for similar goods that are now relatively more expensive.

To illustrate, a decline in the price of beef increases the purchasing power of consumer incomes, so consumers are able to buy more beef (the income effect). At a lower price, beef is relatively more attractive, and it is substituted for pork, lamb and chicken (the substitution effect). The income and substitution effects combine to make consumers willing and able to buy more of a product at a low price than a high price.

THE DEMAND CURVE

This inverse relationship between product price and quantity demanded can be presented within a simple two-dimensional graph. By convention, we measure quantity demanded on the horizontal axis and price on the vertical axis. This involves locating on the graph those five price–quantity possibilities shown in Table 3.1 by drawing perpendiculars from the appropriate points on the two axes. Thus, in plotting the '$5 price, quantity demanded' possibility, we must draw a perpendicular from the horizontal (quantity) axis at 10 to meet a perpendicular drawn from the vertical (price) axis at $5. If this is done for all five possibilities, the result is a series of points as shown in Figure 3.1. Each of these represents a specific price, and the corresponding quantity the consumer will choose to purchase at that price.

Now, assuming the same inverse relationship between price and quantity demanded at *all* points between the ones graphed, we can generalise on the inverse relationship between price and quantity demanded by drawing a curve to represent all price–quantity possibilities within the limits shown on the graph. The resulting curve is called a **demand curve** and is labelled *dd* in Figure 3.1. It slopes downwards and to the right because the relationship it portrays between price and quantity demanded is negative or inverse. The law of demand—people buy more at a low price than they do at a high price—is reflected in the downward slope of the demand curve.

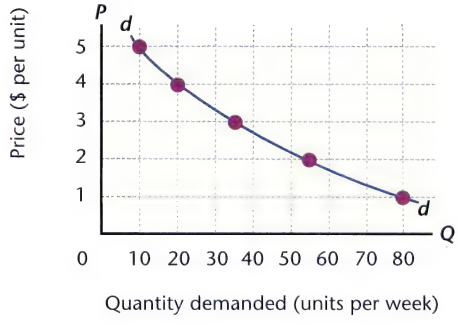


FIGURE 3.1
An individual buyer's demand curve for product *X*

An individual's demand schedule graphs as a downsloping curve such as *dd*, because price and quantity demanded are inversely related. Specifically, the law of demand generalises that consumers will demand more of a product as its price declines.

What is the advantage of graphing our demand schedule? After all, Table 3.1 and Figure 3.1 contain exactly the same data and reflect the same relationship between price and quantity demanded. The advantage of graphing is that it permits us to

represent clearly a particular relationship—in this case the law of demand—in a much simpler way than we could if we were forced to rely upon verbal and tabular presentation. A single curve on a graph, if understood, is simpler to state and to *manipulate* than tables and lengthy verbal presentations are. Graphs are invaluable tools in economic analysis. They permit clear expression and handling of complex relationships. If you still do not feel comfortable with graphs at this point it may be valuable for you to review the material in the appendix to Chapter 1.

INDIVIDUAL AND MARKET DEMAND

Until now, our abstractions have been based on situations where there is just one consumer. The assumption of competition makes us consider a situation in which there are a large number of buyers in the market. The transition from an *individual* to a *market* demand schedule can be accomplished easily by summing the quantities demanded by each consumer at the various possible prices. If there were just three buyers in the market, as shown in Table 3.2, it would be easy to determine the total quantities demanded at each price. Figure 3.2 shows the same summing procedure graphically, using only the $3 price to illustrate the adding-up process. Note that we are simply summing up the three individual demand curves *horizontally* at each and every price to derive the total demand curve *DD*.

Table 3.2 Market demand for product *X*, three buyers

Price per unit ($)	Quantity demanded by first buyer	Quantity demanded by second buyer	Quantity demanded by third buyer	Total quantity demanded per week
5	10	+ 12	+ 8	= 30
4	20	+ 23	+ 17	= 60
3	35	+ 39	+ 26	= 100
2	55	+ 60	+ 39	= 154
1	80	+ 87	+ 54	= 221

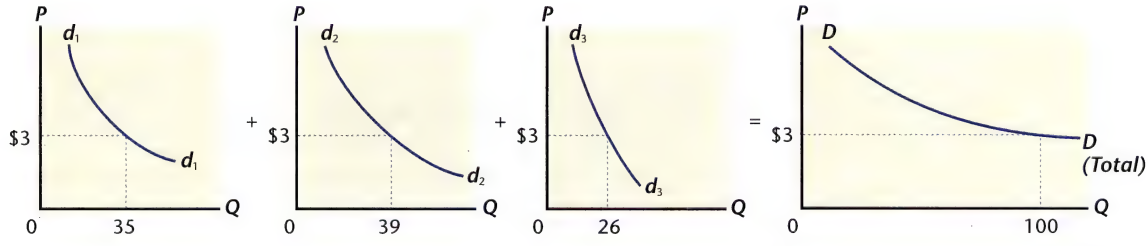


FIGURE 3.2
The market demand curve is the sum of the individual demand curves

Graphically, the market demand curve (*D* total) is found by summing horizontally the individual demand curves (d_1, d_2 and d_3) of all consumers in the market, at each and every price.

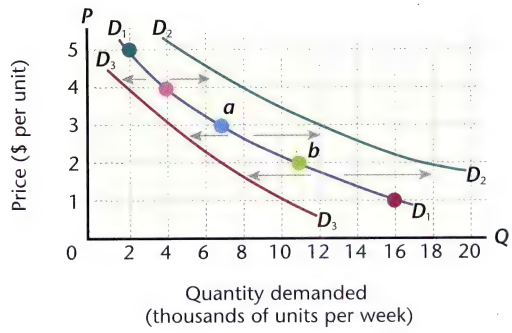


FIGURE 3.3
Changes in the demand for a product

A change in one or more of the determinants of demand—consumer tastes, the number of buyers in the market, money incomes, the prices of other goods or consumer expectations—will cause a change in demand. An increase in demand shifts the demand curve to the right, as from D_1D_1 to D_2D_2. A decrease in demand shifts the demand curve to the left, as from D_1D_1 to D_3D_3. A change in the quantity demanded involves a movement, caused by a change only in the price of the product under consideration, from one point to another—as from *a* to *b*—on a fixed demand curve.

Competition, of course, generally involves many more than three buyers of a product. So, to avoid a lengthy addition process, let us suppose that there are 200 buyers of *X* in the market, each of whom chooses to buy the same amount at each of the various prices as our original consumer. Thus we can determine total or market demand by taking the quantities demanded that are listed in Table 3.1 and multiplying them by 200. Curve D_1D_1 in Figure 3.3 shows the market demand curve for 200 buyers.

Table 3.3 Market demand by 200 buyers for product *X*

Price per unit ($)	Quantity demanded per week by 1 buyer	Number of buyers in the market	Total quantity demanded per week
5	10	× 200	= 2 000
4	20	× 200	= 4 000
3	35	× 200	= 7 000
2	55	× 200	= 11 000
1	80	× 200	= 16 000

DETERMINANTS OF DEMAND

When economists construct a demand curve, such as D_1D_1 in Figure 3.3, they are showing the influence of price as a determinant of the amount of any product purchased. But we are aware that factors *other than price* can and do affect purchases. Thus in locating a given demand curve, such as D_1D_1, the economist must also assume that 'other things are equal'—that is, that *all other determinants of demand other than the price of the good itself are assumed to be constant.* When these other **determinants of demand** do in fact change, the demand curve shifts to some new position to the right or left of D_1D_1.

What are the major determinants of market demand other than the price of the product? The basic ones are:

1 the tastes or preferences of consumers

2 the number of consumers in the market

3 the money incomes of consumers

4 the prices of related goods (substitutes and complements)

5 consumer expectations about future prices and incomes.

CHANGES IN DEMAND

A change in one or more of the determinants of demand (other than price) will change the demand schedule data in Table 3.3 and, therefore, shift the location of the demand curve in Figure 3.3. Such a change in the demand schedule data or, graphically, a *shift* in the location of the demand curve, is called a **change in demand**.

If consumers become willing and able to buy more of this particular good at each possible price than is reflected in column 4 of Table 3.3, an *increase in demand* has occurred. In Figure 3.3, this increase in demand is reflected in a shift of the demand curve to the right, for example, from D_1D_1 to D_2D_2. Conversely, a *decrease in demand* occurs when, because of a change in one or more of the determinants of demand (other than price), consumers buy less of the product at each possible price than is indicated in column 4 of Table 3.3. Graphically, a decrease in demand entails a shift of the demand curve to the left, for example, from D_1D_1 to D_3D_3 in Figure 3.3.

Let us now examine the effect upon demand of changes in each of the determinants we have mentioned.

TASTES

A change in consumer tastes or preferences that is favourable to a product—possibly prompted by advertising or fashion changes—means that more of the product is demanded at each price; that is, demand increases, and the demand curve shifts to the right. An unfavourable change in consumer preferences causes demand to decrease, shifting the curve to the left. An example of the latter is the association of high cholesterol levels with the consumption of certain foods, causing consumers to shift away from 'fatty' foods towards more 'healthy' products.

NUMBER OF BUYERS

An increase in the number of consumers in a market—brought about perhaps by improvements in communications, transport or by population growth—results in an increase in demand and shifts the demand curve to the right. A decrease in the number of consumers results in a decrease in demand (and the demand curve shifts to the left). Demographic changes, such as the life cycle of 'baby boomers' (people born during the population explosion following World War II), can significantly alter demand patterns for products.

INCOME

Normal goods: commodities whose demand varies directly with money income; also known as superior goods.

Inferior goods: commodities whose demand varies inversely with money income.

The impact of changes in money income upon demand is more complex. For most commodities, a rise in income causes an increase in demand and a rightward movement of the demand curve. Consumers typically buy more steaks, CDs and wine as their incomes increase. Conversely, the demand for such products declines in response to a fall in incomes. Commodities whose demand varies *directly* with money income are called superior or **normal goods**.

Although most products are normal goods, there are a few exceptions. As incomes increase beyond some point, the amounts of bread or potatoes or cabbages purchased at each price may diminish because the higher incomes now allow consumers to buy more high-protein foods, such as dairy products and meat. Rising incomes may cause the demand for beef mince and apples to decline (and the demand curve shifts to the left) as wealthier consumers switch to rump steak and strawberries. Goods whose demand varies *inversely* with a change in money income are called **inferior goods**.

PRICES OF RELATED GOODS

Whether a given change in the price of a related good increases or decreases the demand for the product under consideration depends upon whether the related good is a substitute for it, or a complement to it.

Substitutes

Substitute goods: goods that can be used in place of another good. In addition, there is a direct relationship between the price of one good and the demand for another.

A **substitute good** is a good that can be used in place of another good. For example, butter and margarine are substitute, or competing, goods. When the price of butter rises, consumers purchase a smaller amount of butter, and this causes the demand for margarine to increase.[2] Conversely, as the price of butter falls, consumers buy larger quantities of butter, causing the demand for margarine to decrease. *Generalisation*: When two products are substitutes, the price of one and the demand for the other are directly related. In other words, a *decrease* in the price of one good causes the demand curve of the other good to shift to the left. This occurs with Nikes and Reeboks; sugar and artificial sweeteners; Holdens and Fords; tea and coffee; and so on.

Complements

Complementary goods: goods that are used in conjunction with each other. In addition, there is an indirect relationship between the price of one good and the demand for another.

A **complementary good** is a good used in conjunction with another good. Such pairs of products are complementary in that they 'go together'. If the price of petrol falls and, as a result, you drive your car more, this extra driving increases your demand for engine oil. Conversely, an increase in the price of petrol diminishes the demand for oil.[3] Thus petrol and oil are jointly demanded: they are complements. So are bacon and eggs; gin and tonic; CDs and CD players; cameras and rolls of film; and so on. *Generalisation*: When two commodities are complements, the price of one good and the demand for the other are inversely related.

Independent goods: goods that are not related at all, so that a change in the price of one good will have negligible impact on the demand for the other.

Many pairs of goods, of course, are not related at all—they are **independent goods**. For such pairs of commodities as, for example, butter and golf balls, potatoes and cars, bananas and wristwatches, we would expect that a change in the price of one would have little or no impact upon the demand for the other.

EXPECTATIONS

Consumer expectations of higher future prices may prompt them to buy now in order to beat the expected price rises and, similarly, the expectation of rising incomes may induce consumers to be less tight-fisted in their current spending. Conversely, expectations of falling prices and income tend to decrease the current demand for products. An example of this is the fall in car sales observed in the months leading to the introduction of the GST. Many buyers expected a fall in the price (the GST rate being lower than the previous wholesale tax rate) and thus postponed their purchase of a new vehicle.

CHANGES IN QUANTITY DEMANDED

A 'change in demand' must not be confused with a 'change in the quantity demanded'. A change in demand refers to a shift in the entire demand curve either to the right (an increase in demand) or to the left (a decrease in demand). The cause of a change in demand is a change in one or more of the determinants of demand, other than the price of the good itself. As used by economists, the term 'demand' refers to a schedule or curve; therefore, a 'change in demand' must mean that the entire schedule has changed and that the curve on the graph of demand has shifted.

In contrast, a **change in the quantity demanded** indicates a movement from one point to another point—from one price–quantity combination to another—on a given demand curve. The cause of a change in the quantity demanded can only be a change in the price of the product under consideration. In Table 3.3 a decline in the price asked by suppliers of X from \$5 to \$4 will increase the quantity of X demanded from 2000 to 4000 units.

Figure 3.3 is helpful in making the distinction between a change in demand and a change in the quantity demanded. The shift of the demand curve D_1D_1 to either D_2D_2 or D_3D_3 is a 'change in demand'. But the movement from point a to point b on curve D_1D_1 is a 'change in the quantity demanded'.

Decide whether a change in demand or a change in the quantity demanded is involved in each of the following examples:

1. Consumer incomes rise, with the result that more jewellery is purchased.
2. A hairdresser raises the price of haircuts and the salon experiences a decline in business volume.
3. The price of Fords goes up and, as a consequence, the sales of Holdens increase.

Concept highlights

- Demand is defined as a schedule that shows the quantities of a product that consumers are willing and able to purchase at each specific price in a set of possible prices during some specified period of time, all other things being equal.
- The law of demand states that, all else being constant, as price falls, the corresponding quantity demanded rises; as price increases, the corresponding quantity demanded falls.
- A change in quantity demanded is represented by a movement along a fixed demand curve, and is a response to a change in the market price of the commodity.
- A shift in the demand curve is referred to as a change in demand, and is a result of a change in one of the determinants of demand.
- The determinants of demand include: preferences or tastes for the product; the number of buyers in the market; the income of consumers and whether the product is normal or inferior in its income characteristics; the price of complementary and substitute products; and the expectations of consumers regarding future prices and incomes. Figure 3.4 summarises the effect of changes in the determinants of demand and is a useful learning aid.

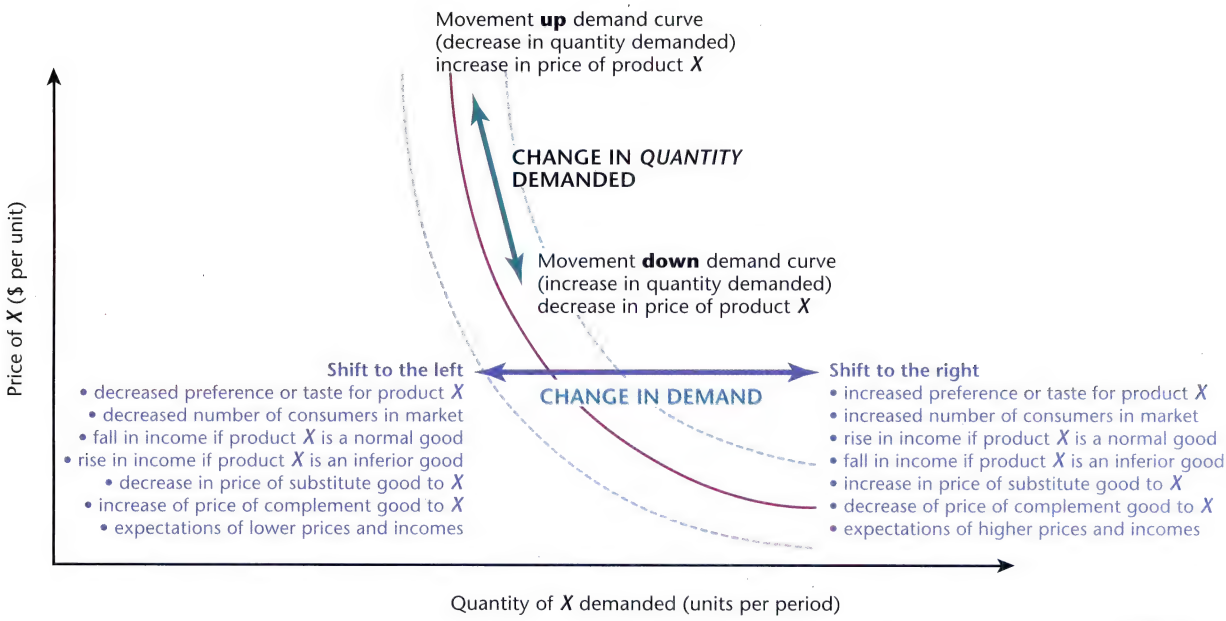


FIGURE 3.4
Graphical summary of determinants of demand

Price changes are reflected in movements along the demand curve as indicated by the arrows. Shifts in the demand curve depend on which determinant has changed, and in which direction.

SUPPLY

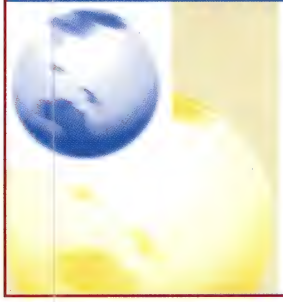
Supply is a schedule that shows the various amounts of a product that producers are willing and able to produce and make available for sale in the market at each specific price in a set of possible prices during some specified period.[4] This **supply schedule** indicates a series of alternative possibilities, such as those shown in Table 3.4 for a single producer. Let us suppose, in this case, that a producer is producing product *X*, the demand for which we have just considered.

Table 3.4 An individual producer's supply of product *X*

Price per unit ($)	Quantity supplied per week
5	60
4	50
3	35
2	20
1	5

Our definition of supply indicates that supply is usually viewed from the vantage point of price. That is, we read supply as showing the amount that producers are willing and able to offer at various possible prices. It is more useful and quite correct in some instances to view supply from the reference point of quantity. Instead of asking what quantities will be offered at various prices, we can ask what prices will be required to induce producers to offer various quantities of a good.

Business IMPLICATION — THE DEMAND–SUPPLY MODEL



Although amongst the simplest of economic models, the demand–supply model's greatest virtues are perhaps its flexibility and usefulness as a first approximation. Frequently, you can get some back-of-the-envelope (or back-of-the-serviette) approximations of the impact of a market change or policy change by using simple demand and supply analysis. Choosing a more complete model for further analysis at a later date can allow you to refine your approximations. Although the quantitative results of a more detailed analysis may differ from those of the demand–supply model, the qualitative effects will frequently be very similar.

LAW OF SUPPLY

Law of supply: the direct relationship between the price and the quantity supplied of a good or service during some period of time.

Table 3.4 shows a positive or *direct* relationship between price and quantity supplied. As price rises, the corresponding quantity supplied rises; as price falls, the quantity supplied also falls. This particular relationship is called the **law of supply**. It simply tells us that producers are willing and able to produce and offer for sale more of their product at a high price than they are at a low price. This again is basically a matter of commonsense.

Price is a deterrent from the consumer's standpoint. The obstacle of a high price means that the consumer, being on the paying end of this price, will buy a relatively small amount of the product; the lower the price obstacle, the more the consumer will buy. The supplier, however, is on the receiving end of the product's price. To a supplier, price is revenue per unit and an incentive to produce and sell a product. Other things being equal, the higher the price of the product, the greater the incentive to produce and offer it in the market.

Consider a farmer whose resources can be shifted within limits between alternative products. As the price of, say, wheat increases, the farmer finds it profitable to take land out of barley, oats or vegetables and put it into wheat. Thus the quantity of wheat supplied increases as its price rises. This assumes, of course, that the prices of the alternative products are not changing.

Now consider a manufacturing concern. Beyond some point, manufacturers usually encounter increasing production costs per added unit of output. Therefore, a higher product price is necessary to cover these rising costs. Costs rise because certain productive resources—in particular, the firm's plant and machinery—cannot be expanded. As the firm increases the amounts of more readily variable resources, such as labour, materials, and component parts, the fixed plant at some point becomes crowded or congested. Productive efficiency declines and the cost of successive units of output increases. Producers must receive a higher price to produce these more costly units. Price and quantity supplied are therefore directly related.

THE SUPPLY CURVE

As with demand, it is convenient to present the concept of supply graphically. Our axes in Figure 3.5 are the same as those in Figure 3.3, except for the change of 'quantity demanded' to 'quantity supplied'. The graphical procedure is the same as that previously explained, but the quantity data and relationship involved are different. The market supply data graphed in Figure 3.5 as S_1S_1 are shown in Table 3.5, which assumes that there are 200 suppliers in the market having the same supply schedules as the producer previously represented in Table 3.4.

FIGURE 3.5
Changes in the supply of a product

A change in one or more of the determinants of supply—including productive techniques, resource prices, price expectations and the number of sellers in the market—will cause a change in supply. An increase in supply shifts the supply curve to the right, as from S_1S_1 to S_2S_2. A decrease in supply is shown graphically as a movement of the curve to the left, as from S_1S_1 to S_3S_3. A change in the quantity supplied involves a movement caused by a change only in the price of the product under consideration, from one point to another—as from *a* to *b*—on a fixed supply curve.

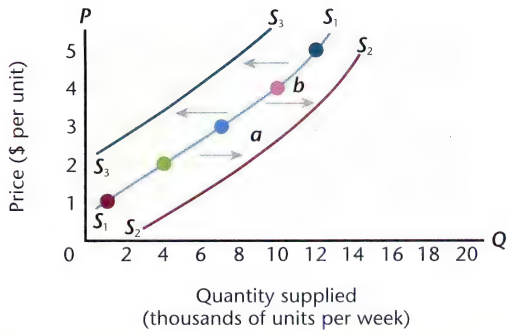


Table 3.5 Market supply of product *X* by 200 producers

Price per unit ($)	Quantity supplied per week by one producer	Number of sellers in the market	Total quantity supplied per week
5	60	× 200	= 12 000
4	50	× 200	= 10 000
3	35	× 200	= 7 000
2	20	× 200	= 4 000
1	5	× 200	= 1 000

DETERMINANTS OF SUPPLY

In constructing a supply curve, the economist is showing how price influences the quantity supplied of any product. But, as with the demand curve, the **supply curve** is anchored on the 'other things are equal' assumption. The supply curve is drawn on the supposition that certain determinants of the amount supplied are given and do not change. If any of these non-price determinants of supply do in fact change, the supply curve shifts.

The basic determinants of supply are:

1. resource prices
2. technology
3. prices of other goods
4. expectations
5. the number of sellers in the market.

A change in any one or more of these determinants causes the supply curve for a product to shift to either the right or the left. A shift to the *right*, from S_1S_1 to S_2S_2 in Figure 3.5, indicates an *increase in supply*: producers are now offering more of the product at each possible price. A shift to the *left*, from S_1S_1 to S_3S_3 in Figure 3.5, indicates a *decrease in supply*: suppliers are offering less at each price.

CHANGES IN SUPPLY

How do changes in each of these determinants affect supply?

RESOURCE PRICES

As indicated in our explanation of the law of supply, the relationship between production costs and supply is an intimate one. A firm's supply curve is based on

production costs; the firm must receive higher prices for additional units of output because those extra units cost more to produce. It follows that a decrease in resource prices lowers production costs and increases supply; that is, it shifts the supply curve to the right. For example, if prices of seed and fertiliser decrease, we can expect the supply of wheat to increase. Conversely, an increase in resource prices raises production costs and reduces supply; that is, it shifts the supply curve to the left. For example, increases in the prices of iron ore and coal increase the cost of producing steel and reduce its supply.

TECHNOLOGY

Technological improvement permits production of a unit of output with fewer resources. Hence production costs are reduced and supply increases. For example, recent breakthroughs in superconductivity research may mean that electric power can be transmitted with little or no loss. Currently, about 30 per cent of electric power transmitted by copper cable is lost. The consequence of the breakthroughs? Significant cost reductions and supply increases may occur in a wide range of products where energy is an important input.

PRICES OF OTHER GOODS

Changes in the prices of other goods can also shift the supply curve for a product. A decline in the price of wheat may cause a farmer to produce and offer more oats at each possible price. Conversely, a rise in the price of wheat may make farmers less willing to produce and offer oats in the market. A firm manufacturing athletic equipment may reduce its supply of footballs in response to a rise in the price of basketballs.

EXPECTATIONS

Expectations about the future price of a product can also affect a producer's current willingness to supply that product. It is difficult, however, to generalise about how the expectation of, say, higher prices will affect the present supply curve of a product. For example, farmers might withhold some of their current wheat harvest from the market, anticipating a higher wheat price in the future. This would cause a decrease in the current supply of wheat. On the other hand, in many types of manufacturing, expected price increases may induce firms to expand production immediately, causing supply to increase.

NUMBER OF SELLERS

Given the scale of operations of each firm, the larger the number of suppliers, the greater the market supply. As more firms enter an industry, the supply curve shifts to the right. The smaller the number of firms in an industry, the less the market supply. This means that as firms leave an industry, the supply curve shifts to the left.

CHANGES IN QUANTITY SUPPLIED

The distinction between a 'change in supply' and a 'change in the quantity supplied' parallels that between a change in demand and a change in the quantity demanded. A **change in supply** means the entire supply curve shifts. An increase in supply shifts the curve to the right; a decrease in supply shifts it to the left. The cause of a change in supply is a change in one or more of the determinants of supply, other than the price of the good. The term 'supply' is

used to refer to a schedule or curve. A 'change in supply' must therefore mean that the entire schedule has changed or that the curve has shifted.

A **change in the quantity supplied**, however, refers to the movement from one point to another point on a stable supply curve. The cause of such a movement is a change in the price of the specific product under consideration. In Table 3.5 a decline in the price of *X* from $5 to $4 decreases the quantity of *X* supplied from 12 000 to 10 000 units.

If the supply curve in Figure 3.5 shifts from S_1S_1 to S_2S_2 or S_3S_3, this reflects changes in supply. The movement from point *a* to point *b* on S_1S_1, however, indicates a change in the quantity supplied.

Concept highlights

- Supply is defined as a schedule that shows the various quantities of a product that producers are willing and able to produce and make available for sale in the market, at each specific price in a set of possible prices, during some specified time period.
- The law of supply states that producers are willing and able to produce and offer for sale a greater quantity of their product at a high price than they are at a low price.
- A change in quantity supplied is represented by a movement along a fixed supply curve, and is a response to a change in the market price of the commodity.
- A shift in the supply curve is referred to as a change in supply, and is a result of a change in one of the determinants of supply.
- The determinants of supply include: the price of resources used in the production of the product; technology; the prices of other products; the expectations of suppliers regarding future prices; and the number of sellers in the market. Figure 3.6 summarises the effects of changes in the determinants of supply and is a useful learning aid.



FIGURE 3.6
Graphical summary of determinants of supply

Price changes are reflected in movements along the supply curve indicated by the arrows. Shifts in supply will depend on which determinant of supply changes, and in which direction.

Business IMPLICATION

EXCHANGE RATES AND THE COST OF INPUTS

Many of the determinants of demand and supply cannot be influenced by individual firms. An example of this is the impact of exchange rates on both the relative prices of goods sold and on the relative cost of inputs used in the production process. Businesses need to ensure that they have strategies in place to insulate them from these effects.

Recently, BMW announced its decision to sell its Rover and other UK-based automotive production facilities. The reasons? BMW was losing money on its UK investments. The strength of the British pound had made it too expensive for BMW to produce cars in the UK, relative to the cost of production in other parts of Europe, and made BMW's UK-produced cars too expensive to successfully compete in export markets. However, Ford, the buyer of some of these assets from BMW, believes that its business strategies will allow it to run its new acquisitions profitably, as part of its global production strategy.

Global SNAPSHOT

COMPUTERS PER CAPITA

The number of computers per capita in high-income, developed countries is substantially higher than the worldwide average. The rate of growth in computers per 1000 of population is also much higher on average in high-income countries.

Rank in 2000	Country	Computers/1000 people 1985	2000
1	United States	90.1	580.0
2	Australia	21.5	525.7
4	Canada	36.4	511.9
8	New Zealand	25.7	499.2
12	Singapore	17.8	412.0
	Europe	14.3	248.9
	Worldwide	**7.8**	**90.3**

SOURCE: Computer Industry Almanac *on Infoplease.com, http://infoplease.lycos.com/*

Questions

1. Calculate the rate of growth in computers per 1000 population between 1985 and 2000. Has ownership grown fastest in the countries with the greatest number of computers per capita?
2. What are likely to be the major demand determinants of the number of computers per 1000 population?
3. Are computers a complementary good to other products? If so, list some of the goods and services that are likely to be complements of computers.
4. What supply determinants may affect the number of computers per 1000 population?
5. Which do you think have had the greatest effect on the growth in computers per 1000 population: supply shifts or demand shifts? Explain.

SUPPLY AND DEMAND: MARKET EQUILIBRIUM

We now bring the concepts of supply and demand together to see how the interaction of the buying decisions of *many* households and the selling decisions of *many* producers determine the price of a product and the quantity that is actually bought and sold in the market. In Table 3.6, columns 1 and 2 reproduce the market supply schedule for product *X* from Table 3.5, and columns 2 and 3 the market demand schedule from Table 3.3. Note that in column 2 we are using a common set of prices. We are assuming that there is competition, that is, the presence of a large number of buyers and sellers.

Table 3.6 Market supply and demand for product *X*

1 Total quantity supplied per week	2 Price per unit ($)	3 Total quantity demanded per week	4 Surplus (+) or shortage (−) (arrow indicates effect on price)
12 000	5	2 000	+10 000 ↓
10 000	4	4 000	+6 000 ↓
7 000	**3**	**7 000**	**0**
4 000	2	11 000	−7 000 ↑
1 000	1	16 000	−15 000 ↑

SURPLUSES (EXCESS SUPPLY)

Of the five possible prices shown at which product *X* might sell in this market, which will actually prevail as the *market price* for *X*? We find our answer through the simple process of trial and error. For no particular reason, we start with an examination of $5. Could this be the prevailing market price for *X*? The answer is 'No', for the simple reason that producers are willing to produce and supply to the market 12 000 units at this price while buyers, on the other hand, are willing to buy only 2000 units at this price. The relatively high price of $5 encourages a great deal of *X* production, but that same high price discourages consumers from buying the product. Other products appear as 'better buys' when *X* is high-priced. The result in this case is a 10 000-unit **surplus** or *excess supply* of *X* in the market. This surplus, shown in column 4, is the excess of quantity supplied over quantity demanded at the price of $5. Producers would find themselves with unwanted inventories of *X*.

Could a price of $5—even if it existed momentarily in the *X* market—be maintained? Certainly not. The very large surplus would prompt the many competing sellers to bid down the price in order to encourage buyers to take this surplus off their hands.

Suppose price gravitates down to $4. Now the situation has changed considerably. The lower price has encouraged buyers to take more of this product off the market and, at the same time, has induced producers to use a smaller amount of resources. The surplus, as a result, has diminished to 6000 units. However, a surplus still exists and competition among sellers will once again bid down the price. We can conclude, therefore, that prices of $5 and $4 will be unstable because they are 'too high'. The market price for *X* must be something less than $4.

SHORTAGES (EXCESS DEMAND)

Looking at the other end of our price column, we examine \$1 as the possible market price. At this price, the quantity demanded is in excess of quantity supplied by 15 000 units. This relatively low price discourages producers from devoting their resources to X production; the same low price encourages consumers to want to buy more than is available. There is a 15000-unit **shortage** or *excess demand*. Can this price of \$1 persist as the market price? No. Competition among buyers will bid up the price to something greater than \$1. Many potential consumers will express a willingness to pay a price above \$1 to ensure getting some of the available product. Many other consumers, however, who are willing and able to buy at the price of \$1, will obviously then be left out in the cold.

Suppose this competitive bidding up of price by buyers boosts the price to \$2. This higher price reduces, but does not eliminate, the shortage. For \$2, producers are willing to devote more resources to X production, and some buyers who were willing to pay \$1 will choose not to buy at a price of \$2. But a shortage of 7000 units still exists at a price of \$2. We can conclude that competitive bidding among buyers will push market price above \$2.

EQUILIBRIUM

By trial and error we have eliminated every price but \$3. At a price of \$3, *and only at this price*, the quantity that producers are willing to produce and supply in the market is identical with the quantity consumers are willing to buy. As a result, there is neither a shortage nor a surplus at this price.

We have already seen that a surplus causes price to decline and a shortage causes price to rise. With neither a shortage nor a surplus at \$3, there is no reason for the actual price of X to move away from this price. The economist calls this price the *market-clearing* or **equilibrium price**, equilibrium meaning 'in balance' or 'at rest'. At \$3, quantity supplied and quantity demanded are in balance; that is, the **equilibrium quantity** is 7000 units. Hence \$3 is the only stable price under the supply and demand conditions shown. Or, stated differently, the price of X *tends* to be established where the supply decisions of producers and the demand decisions of buyers are mutually consistent. Such decisions are consistent with one another only at a price of \$3. At any higher price, suppliers want to sell more than consumers want to buy; at any lower price, consumers want to buy more than producers are willing to offer for sale. Discrepancies between supply and demand intentions of sellers and buyers, respectively, prompt price changes that subsequently bring these two sets of plans into accord with one another.

A graphical analysis of supply and demand should yield the same conclusions. Figure 3.7 puts the market supply and market demand curves for X on the same graph, the horizontal axis now reflecting both quantity demanded and quantity supplied.

At any price above the equilibrium price of \$3, quantity supplied exceeds quantity demanded. This surplus causes a competitive bidding down of price by sellers eager to rid themselves of their surplus. The falling price causes less of X to be offered and simultaneously encourages consumers to increase the quantity that they buy.

Any price below the equilibrium price means a shortage; that is, quantity demanded exceeds quantity supplied. Competitive bidding by buyers pushes the price up towards the equilibrium level, and this rising price simultaneously brings about an increase in quantity supplied by producers, and rations buyers out of

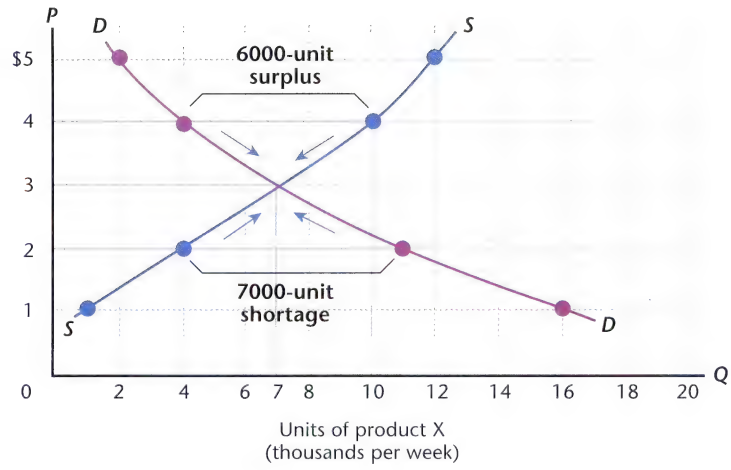


FIGURE 3.7
The equilibrium price and quantity for product *X* as determined by market demand and supply

The intersection of the down-sloping demand curve *DD* and the up-sloping supply curve *SS* indicates the equilibrium price and quantity, $3 and 7000 units in this instance. The shortages of *X* that would exist at below-equilibrium prices, for example 7000 units at $2, drive the price up, and in so doing, increase the quantity supplied and reduce the quantity demanded until equilibrium is achieved. The surpluses that would result if there were above-equilibrium prices, for example 6000 units at $4, push the price down, and so increase the quantity demanded and reduce the quantity supplied until equilibrium is achieved.

the market, so causing the shortage to vanish. Graphically, *the intersection of the supply curve and the demand curve for the product indicates the equilibrium point*. In this case, as we know, equilibrium price and quantity are $3 and 7000 units.

THE RATIONING FUNCTION OF PRICES

The ability of the competitive forces of supply and demand to establish a price where supply and demand decisions are synchronised is sometimes called the **rationing function of prices**. In the case of our example, the equilibrium price of $3 clears the market, leaving no inconvenient surplus for the sellers and no inconvenient shortage for the potential buyers. The combination of freely made, individual buying and selling decisions sets the price that clears the market. In effect, the market mechanism of supply and demand means that any buyer who is willing and able to pay $3 for a unit of *X* will be able to acquire one; those buyers who are not, will not. Similarly, any seller who is willing and able to produce units of *X* and offer them for sale at a price of $3 will be able to do so successfully; those sellers who are not willing and able to will not.

CHANGES IN SUPPLY AND DEMAND: SHIFTING THE CURVES

We noted earlier that demand may change because of fluctuations in consumer tastes or incomes, changes in consumer expectations, or variations in the prices of related goods. Supply may vary in response to changes in technology, resource prices or other variables. Our analysis would be incomplete without considering the effect of changes in supply and demand on equilibrium price.

CHANGING DEMAND

We first analyse the effects of a change in demand, assuming that supply is constant. Suppose now that demand increases, as shown in Figure 3.8(a). What is the effect on *market price*? Noting that the new intersection of the supply and demand curves is at a higher point on both the price and quantity axes, we can conclude that an increase in demand, given that other things (supply) are equal,

has *a price-increasing effect and a quantity-increasing effect.* (The value of graphical analysis now becomes apparent: we need not fumble with columns of figures in determining the effect on price and quantity, but only compare the new with the old point of intersection on the graph.)

A decrease in demand, as illustrated in Figure 3.8(b), reveals *price-decreasing and quantity-decreasing effects.* Price falls, and quantity also declines. We have found a *direct relationship between a change in demand and the resulting changes in both equilibrium price and quantity.*

CHANGING SUPPLY

We now analyse the effect of a change in supply on price, assuming that demand is constant. If supply increases, as in Figure 3.8(c), the new intersection of supply and demand is obviously at a lower equilibrium price. Equilibrium quantity, however, increases. If supply decreases, however, this tends to increase product price. Figure 3.8(d) illustrates this situation. Here, price increases but quantity declines.

An increase in supply has a *price-decreasing and a quantity-increasing effect.* A decrease in supply has a *price-increasing and a quantity-decreasing effect. There is an inverse relationship between a change in supply and the resulting change in equilibrium price, but the relationship between a change in supply and the resulting change in equilibrium quantity is direct.*

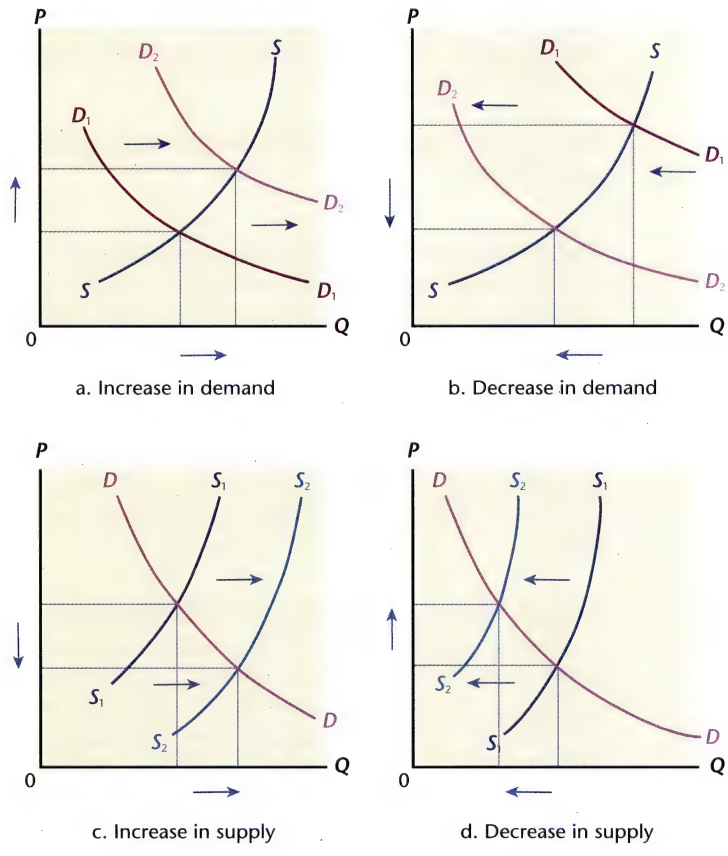


FIGURE 3.8
Changes in demand and supply and the effects on price and quantity

The increase in demand in 3.8(a) and the decrease in demand in 3.8(b) indicate a direct relationship between a change in demand and the resulting changes in equilibrium price and quantity. The increase in supply in 3.8(c) and the decrease in supply in 3.8(d) show an inverse relationship between a change in supply and the resulting change in equilibrium price, but a direct relationship between a change in supply and the accompanying change in equilibrium quantity.

COMPLEX CASES

Many more complex cases may occur, involving changes in both supply and demand. For example, there are two possible cases when supply and demand change in *opposite directions*.

Supply increases; demand decreases

Assume first that supply increases and demand decreases simultaneously. What effect does this have on equilibrium price? This example couples two price-decreasing effects, and the net result is a price fall greater than that resulting from either change alone.

What about equilibrium quantity? Here the effects of the changes in supply and demand are opposed: the increase in supply tends to *increase* equilibrium quantity, but the decrease in demand tends to *reduce* the equilibrium quantity. The direction of the change in quantity depends upon the relative sizes of the changes in supply and demand.

Supply decreases; demand increases

The second possibility is for supply to decrease and demand to increase simultaneously. Two price-increasing effects are involved here. We predict an increase in equilibrium price greater than that caused by either change taken separately. The effect on equilibrium quantity is again indeterminate, depending upon the relative size of the changes in supply and demand. If the decrease in supply is relatively larger than the increase in demand, the equilibrium quantity will be less than it was initially. But if the decrease in supply is relatively smaller than the increase in demand, the equilibrium quantity will increase as a result of these changes. You should trace through these two cases graphically to verify the conclusions just outlined.

Two further cases can be considered where supply and demand change in the *same direction*.

Supply increases; demand increases

Suppose, first, that supply and demand both increase. What is the effect on equilibrium price? It depends. Here we must compare two conflicting effects on price: the price-decreasing effect of the increase in supply, and the price-increasing effect of the increase in demand. If the increase in supply is relatively greater than the increase in demand, the net effect is for equilibrium price to decrease. If the opposite holds true, equilibrium price increases.

The effect on equilibrium quantity is certain: increases in supply and in demand both have quantity-increasing effects. This means that equilibrium quantity increases by an amount greater than would result from either change alone.

Supply decreases; demand decreases

A decrease in both supply and demand can be subjected to similar analysis. If the decrease in supply is relatively greater than the decrease in demand, equilibrium price rises. If the reverse holds true, equilibrium price falls. Because decreases in supply and demand both have quantity-decreasing effects, it can be predicted with certainty that equilibrium quantity will decrease.

Some special cases may arise where a decrease in demand and a decrease in supply on the one hand, and an increase in demand and an increase in supply

on the other, exactly cancel out. In both these cases, the net effect on equilibrium price is zero; price does not change. You should work out these more complex cases in terms of supply and demand curves to verify these conclusions. Table 3.7 provides a convenient summary and a way of testing your understanding of supply and demand tools.

Table 3.7 Summary of the price and quantity effects of changes in supply and demand

Supply	Demand		
	Increases	**Unchanged**	**Falls**
Increases	P? Q↑	P↓ Q↑	P↓ Q?
Unchanged	P↑ Q↑	- -	P↓ Q↓
Falls	P↑ Q?	P↑ Q↓	P? Q↓

(P = price, Q = quantity)

THE RESOURCE MARKET

Assuming competitive resource markets—that is, many buyers (producers) and many suppliers (households)—then our analysis of resource markets will be similar to that for the markets for goods and services. As in the product market, resource supply curves are typically up-sloping, and resource demand curves are typically down-sloping.

Resource supply curves slope upwards reflecting a *direct* relationship between resource price and quantity supplied, because it is in the interests of resource owners to supply more of a particular resource at a high price than at a low price. High-income payments in a particular occupation or industry encourage households to supply more of their human and property resources. Low-income payments discourage resource owners from supplying resources in this particular occupation or industry and encourage them to supply their resources elsewhere.

On the demand side, businesses tend to buy less of a given resource as its price rises, and they tend to substitute other relatively low-priced resources for it. Entrepreneurs find it profitable to substitute low-priced for high-priced resources. More of a particular resource is demanded at a low price than at a high price. The result? A down-sloping demand curve for the various resources.

Just as the supply decisions of businesses and the demand decisions of consumers determine prices in the product market, so the supply decisions of households and demand decisions of businesses, in pure capitalism, set prices in the resource market.

'OTHER THINGS BEING EQUAL' REVISITED

Recall from Chapter 1 that economists, because of their inability to conduct controlled experiments, use the 'other things being equal' or *ceteris paribus* assumption in their analyses. We have seen that a number of forces bear upon both supply and demand. Hence, in locating *specific* supply and demand curves, such as D_1D_1 and SS in Figure 3.8(a), the economist focuses on one of the most important determinants of the amounts supplied and demanded—that is, product price.

By representing the laws of demand and supply by down-sloping and up-sloping curves respectively, the economist assumes that all the other determinants of demand (incomes, tastes, and so on) and supply (resource

prices, technology, and so on) are constant or unchanging. That is, price and quantity demanded are inversely related, *other things being equal*, and price and quantity supplied are directly related, *other things being equal*.

If we fail to remember that the 'other things being equal' assumption is basic to the laws of demand and supply, we could encounter confusing situations that seem to be in conflict with these laws. For example, suppose that Ford sells 20 000 Falcons in 1987 at an average price of $12 800; 40 000 in 1989 at an average price of $15 900; 50 000 in 1993 at an average price of $22 300, and 60 000 in 1999 at an average price of $31 000. Price and the number purchased vary directly, and these real-world data seem to be at odds with the law of demand. But is there really a conflict? These data do *not* refute the law of demand. The catch is that the law of demand's 'other things being equal' assumption has been violated with the passage of time; specifically because of, for example, growing incomes and population growth, the demand curve for Falcons has simply increased—shifted to the right as from D_1D_1 to D_2D_2 in Figure 3.8(a)—causing price to rise and, simultaneously, a larger quantity to be purchased.

Conversely, consider Figure 3.8(d). Comparing the original S_1D and the new S_2D equilibrium positions, we note that less of the product is being sold or supplied at a higher price; that is, price and quantity supplied seem to be *inversely* related, rather than *directly* related, as the law of supply indicates. The catch again is that the 'other things being equal' assumption underlying the upsloping supply curve has been violated. Perhaps production costs have gone up or a special tax has been levied on this product, shifting the supply curve from S_1S_1 to S_2S_2.

These examples clarify the importance of our earlier distinction between a 'change in the quantity demanded (or supplied)' and a 'change in demand (supply)'.

Concept highlights

- Equilibrium prices and output are determined through the interaction of demand and supply leading to a market-clearing situation, where the quantity supplied and quantity demanded are equal; supply decisions of producers and demand decisions of buyers are mutually consistent.
- At prices above the market-clearing price, a surplus of the product results, causing producers to bid down their prices to sell their product; at prices below the market-clearing price, a shortage of the product results, causing consumers to bid up the price.
- The rationing function of the equilibrium price reflects its synchronisation of supply and demand decisions: any buyer willing and able to pay the equilibrium price for the product will be able to acquire it; any seller who is willing and able to produce units of the product and offer them for sale at the equilibrium price will be able to do so successfully. In each case those that are not will not.
- An increase in demand and a decrease in supply will tend to increase the equilibrium price; conversely, a decrease in demand and an increase in supply will tend to decrease the equilibrium price.
- When both supply and demand change simultaneously, the sign of the change in one of either the equilibrium price or equilibrium quantity will be indeterminate: whether the change is negative or positive will depend on the relative size of the shifts in each curve. Table 3.7 summarises these results neatly.
- The occurrence of simultaneous shifts in both demand and supply does not invalidate either of the laws of demand and supply.

Asian FOCUS — AIRFARES ON THE INCREASE IN ASIA

Economic recovery in Asia is allowing airlines to boost the fares that they charge passengers and cover their higher fuel costs. In fact, Asia–Pacific airfares are expected to grow 4.5 per cent in 2000. The following increases have been observed across parts of Asia over 1999:

Country/region	Airfares within these countries/regions (per cent increase)		
	First class	Business class	Economy class
India	4.8	0.4	0.3
Pakistan	10.0	10.0	10.0
Hong Kong	4.2	4.3	n.a.
Malaysia	7.0+	7.0+	7.0+
American Express Airfare Index	2.8	2.8	1.2

SOURCE: 'Regional Recovery Pushes Up Airfares', Business Asia, *3 March 2000.*

Questions

1. Using demand–supply analysis, show the impact of rising fuel prices on the equilibrium price – output combination in the market for air travel.
2. Which determinants of demand will be affected by economic recovery? What impact will this have on the demand for air travel? Why? Show the impact in the diagram that you drew in your answer to question 1.
3. Under what situations would airlines see the price that they are able to charge for air travel fall, even as fuel prices rise? Explain, and illustrate this situation in your demand–supply diagram.

EQUILIBRIUM UNDER FLOATING EXCHANGE RATES

Concept application

We will now use our tools of demand and supply to take an introductory look at the determination of the equilibrium value of the **exchange rate**—the rate at which a unit of the currency of one nation is exchanged for units of the currency of another nation. We will explore this topic at greater length and with greater precision in Chapter 18.

Freely floating exchange rates are determined by the unimpeded forces of supply and demand. Let us examine the exchange rate, or price, at which Australian dollars might be exchanged for, say, British pounds sterling.

As indicated in Figure 3.9, the demand for pounds is down-sloping, and the supply of pounds is up-sloping. Why? The down-sloping demand for pounds shown by D_0D_0 indicates that, if pounds become less expensive to Australia, British goods become cheaper to Australians. This fact causes Australians to demand larger quantities of British goods and, therefore, larger amounts of pounds with which to buy those goods.

The supply of pounds is up-sloping, as shown by S_1S_1 in Figure 3.9, because, as the dollar price of pounds rises (that is, the pound price of Australian dollars

falls), the British will be inclined to purchase more Australian goods. The reason, of course, is that at higher and higher dollar prices for pounds, the British can obviously obtain more Australian dollars and, therefore, more Australian goods per pound. Thus, Australian goods become cheaper to the British, inducing the British to buy more of these goods. When the British buy Australian goods, they supply pounds to the foreign exchange market because they must exchange pounds for dollars in order to purchase our goods.

The intersection of the supply and demand curves for pounds determines the dollar price of pounds. In this instance, the equilibrium rate of exchange is $2 to £1.

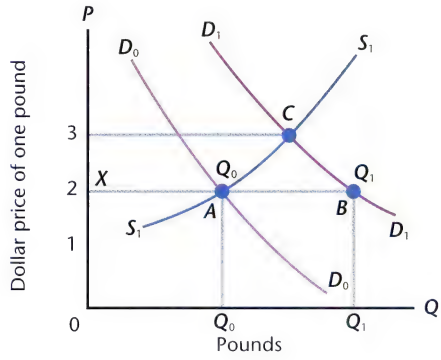


FIGURE 3.9
Determination of equilibrium $/£ (dollar per pound) exchange rate under flexible exchange rates

The demand curve for £ is down-sloping, reflecting the derived demand for £ by Australians. As British goods, services and assets become cheaper with a fall in the exchange rate, Australians demand a greater number of pounds. The supply curve for £ is up-sloping, reflecting the supply of £ by the British. As the exchange rate increases and Australian goods, services and assets become cheaper, the number of pounds supplied by the British increases.

DEPRECIATION AND APPRECIATION

An exchange rate that is determined by free-market forces can and does change frequently. When the dollar price of pounds increases—for example, goes from $2 for £1 to $3 for £1—we say that the value of the dollar has depreciated relative to the pound. More generally, exchange-rate depreciation means that it takes more units of a country's currency (in this case Australian dollars) to buy a single unit of some foreign currency (in this case British pounds sterling). Conversely, when the dollar price of pounds decreases—for example, goes from $2 for £1 to $1 for £1—the value of the dollar has appreciated relative to the pound. In general terms, exchange-rate appreciation means that it takes fewer units of a country's currency (in this case Australian dollars) to buy a single unit of some foreign currency (in this case British pounds sterling).

Observe in our Australian–British illustrations that when the dollar depreciates the pound necessarily appreciates, and vice versa. When the exchange rate between dollars and pounds changes from $2 = £1 to $3 = £1, it now takes more dollars to buy £1 and the dollar has depreciated. But it now takes fewer pounds to buy a dollar. That is, at the initial rate it took £0.5 to buy $1; at the new rate it only takes £0.33 to buy $1. Therefore, the pound has appreciated relative to the dollar. If the dollar depreciates vis-à-vis the pound, the pound appreciates vis-à-vis the dollar; if the dollar appreciates vis-à-vis the pound, the pound depreciates vis-à-vis the dollar.

DETERMINANTS OF EXCHANGE RATES

Why are the demand for and the supply of pounds located as they are in Figure 3.9? Stated differently, what forces will cause the demand and supply curves for pounds to change, and so cause the dollar to appreciate or depreciate? Consider briefly some of the more important factors, discussed in our earlier analysis of the demand and supply model.

CHANGES IN TASTES

Any change in consumer tastes or preferences relating to the product of a foreign country will alter the demand for, or supply of, that nation's currency and change its exchange rate. For example, if quality improvements in Australian meats make them more attractive to British consumers and businesses, then they will supply more pounds in exchange markets to purchase more Australian meat, and the dollar will appreciate. Conversely, if British fabrics become more fashionable, the Australian demand for pounds will increase and the dollar will depreciate.

RELATIVE INCOME CHANGES

If the growth of a nation's income is more rapid than that of other countries, its currency is likely to depreciate. You will recall that a country's imports vary directly with its level of income. If the Australian economy is expanding rapidly and the British economy is stagnant, Australian imports of British goods—and therefore Australian demand for pounds—will increase. The dollar price of pounds will rise, which means that the dollar has depreciated.

RELATIVE PRICE CHANGES

If domestic prices rise rapidly in Australia and remain constant in Britain, Australian consumers will seek out relatively low-priced British goods, so increasing the demand for pounds. Conversely, the British will be less inclined to purchase Australian goods, thus reducing the supply of pounds. This combination of an increase in the demand for, and a reduction in the supply of, pounds will cause the dollar to depreciate.

RELATIVE INTEREST RATES

Suppose Australia embarks upon a tight monetary policy in order to control inflation. As a result, real interest rates—money interest rates adjusted for the rate of inflation—are high in Australia in comparison to the rates in most other nations. Consequently, British individuals and firms find Australia a very attractive place in which to make financial investments. This increase in the demand for Australian financial assets means an increase in the supply of British pounds, and the dollar therefore appreciates in value.

SPECULATION

Suppose it is widely anticipated that the Australian economy will (a) grow faster than the British economy; (b) experience more rapid inflation than the British economy; and (c) have lower future interest rates than in Britain. All these expectations would lead us to believe that in the future the dollar will depreciate and, conversely, the pound will appreciate. Hence, holders of dollars attempt to convert them into pounds, increasing the demand for pounds as shown in Figure 3.9 by the shift in the demand curve for pounds from D_0D_0 to D_1D_1. This will cause an initial shortage of pounds at the original $2 for £1 exchange rate, and will lead to Australians bidding up the price of pounds, and an increase in the quantity of pounds supplied by the British. Thus the expectation has caused the dollar to depreciate and the pound to appreciate. We have, in effect, a self-fulfilling prophecy—the dollar depreciates and the pound appreciates because speculators act on the supposition that these changes in currency values will in fact happen!

Concept Highlights

- Under flexible or floating exchange rates, the forces of supply and demand determine the equilibrium value of the exchange rate.
- The supply of a foreign currency reflects the demand by foreigners for domestic goods, services and assets. The demand for a foreign currency is derived from the demand of residents for foreign goods, services and assets and their need for the foreign currency to achieve their spending objectives.
- An increase in the equilibrium domestic currency price of a foreign currency is said to be a depreciation of the domestic currency, while a decrease is said to be an appreciation of the domestic currency.
- A change in any of the determinants of supply and demand—tastes, relative income, relative prices, relative interest rates and speculation—will lead to a shift in the demand and/or supply of foreign exchange and a change in the equilibrium value of the exchange rate.

A POWERFUL TOOL

As shown in our analysis of the equilibrium level of the exchange rate, the analysis of competitive markets, or the 'supply and demand' model, can be an extremely powerful and versatile tool for economic understanding. Indeed, we will use this model to assist us in understanding a number of important markets and systems in macroeconomics:

- the money market (Chapter 10)
- the markets for exchange settlement and investment funds (Chapter 12)
- fixed versus flexible exchange rate systems (Chapter 19).

We have seen in this chapter that the supply and demand model applies to both product and resource markets, although our treatment of resource markets has been general. The model can be applied in modified forms to explain specific resource prices of importance in macroeconomics, such as wage rates, rents and interest rates (see Chapters 15 and 16 of the companion book *Microeconomics*, 6th edition). The model is also helpful in predicting the effects of sales taxes and the economic implications of tariffs on imported products (see Chapter 19 of *Microeconomics*).

A thorough understanding of the market model is helpful in forecasting the effects of legal prices—that is, of governmentally established prices that are higher (price supports) or lower (price ceilings or controls) than equilibrium prices (see Chapter 6 of *Microeconomics*). For example, in the labour market, a minimum wage creates surpluses of labour; that is, the minimum wage tends to cause unemployment.

More novel uses of the model can also be found. For example the concept of a market for pollution rights is one proposal to deal with pollution problems (see Chapter 17 of *Microeconomics*). Peak-pricing models have also been proposed to resolve temporary problems of congestion such as traffic congestion.

SUMMARY

1 A market is any institution or arrangement that brings together the buyers and sellers of some product or service.

2 Demand refers to a schedule that summarises the willingness of buyers to purchase an amount of a given product during a specific period at each of the various prices at which it might be sold. According to the law of demand, other things being equal or constant, consumers normally demand more of a product at a low price than they do at a high price. Therefore, the relationship between price and quantity demanded is inverse and the graph of demand is a down-sloping curve.

3 Changes in one or more of the basic determinants of demand—consumer tastes, the number of buyers in the market, the money incomes of consumers, the price of related goods and consumer expectations—cause the market demand curve to shift. A shift to the right represents an increase in demand; a shift to the left represents a decrease in demand. A change in demand is to be distinguished from a change in the quantity demanded, the latter involving the movement from one point to another point on a fixed demand curve because of a change in the price of the product under consideration.

4 Supply is a schedule showing the amounts of a product that producers would be willing to offer in the market during a given period at each possible price at which the commodity might be sold. The law of supply says that, other things being equal, producers offer more of a product at a high price than they do at a low price. As a result, the relationship between price and quantity supplied is a direct one, and the supply curve is up-sloping.

5 A change in production techniques, resource prices, price expectations or the number of sellers in the market causes the supply curve of a product to shift. A shift to the right represents an increase in supply; a shift to the left represents a decrease in supply. In contrast, a change in the price of the product under consideration results in a change in the quantity supplied; that is, a movement from one point to another on a given supply curve.

6 Under conditions of competition, the interaction of market demand and market supply adjusts price to that point at which the quantity demanded and the quantity supplied are equal. This is the equilibrium price. The corresponding quantity is the equilibrium quantity.

7 The ability of market forces to synchronise selling and buying decisions to eliminate potential surpluses or shortages is sometimes termed the 'rationing function' of prices.

8 A change in either demand or supply causes equilibrium price and quantity to change. There is a positive, or direct, relationship between a change in demand and the resulting changes in equilibrium price and quantity. Though the relationship between a change in supply and the resulting change in equilibrium price is inverse, the relationship between a change in supply and equilibrium quantity is direct.

9 The concepts of supply and demand used in the analysis of the product market are equally applicable to the resource market, and may be used to examine the determination of the equilibrium levels of wages, rent and interest incomes.

10 The tools of supply and demand provide a powerful instrument with which to analyse a broad range of markets, including the foreign exchange markets, agricultural product markets, and even markets for abstract entities, such as the market for pollution rights.

KEY TERMS *and* CONCEPTS *to remember*

change in demand	77	inferior goods	77
change in quantity demanded	79	law of demand	73
change in quantity supplied	84	law of supply	81
change in supply	83	normal (superior) goods	77
complementary good	78	perfectly competitive markets	72
demand curve	74	rationing function of prices	88
demand schedule	72	shortage	87
determinants of demand	76	substitute good	78
diminishing marginal utility	74	substitution effect	74
equilibrium price and quantity	87	supply curve	82
exchange rate	93	supply schedule	80
income effect	74	surplus	86
independent goods	78		

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 Explain the law of demand. Why does a demand curve slope downwards?

2 **(a)** What are the determinants of demand?

(b) What happens to the demand curve when each of these determinants changes?

3 Distinguish between a change in demand and a change in the quantity demanded, noting the cause(s) of each.

4 Explain the law of supply. Why does the supply curve slope upwards?

5 **(a)** What are the determinants of supply?

(b) What happens to the supply curve when each of these determinants changes?

6 Distinguish between a change in supply and a change in the quantity supplied, noting the cause(s) of each.

7 'Prices are the automatic regulator that tends to keep production and consumption in line with each other.' Explain.

8 What will be the impact on price and quantity of a market shortage of a good?

9 What will be the impact on price and quantity of a market surplus of a good?

10 Why does the demand curve for a foreign currency slope downwards, and the supply curve for a foreign currency slope upwards?

Problems & exercises

1 Suppose the total demand for wheat and the total supply of wheat per month in the grain market are as shown in the table.

Thousands of units demanded	Price per unit ($)	Thousands of units supplied	Surplus (+) or shortage (−)
85	3.40	72	
80	3.70	73	
75	4.00	75	
70	4.30	77	
65	4.60	79	
60	4.90	81	

(a) What will be the market or equilibrium price? What is the equilibrium quantity? Using the surplus/shortage column, explain why your answers are correct.

(b) Using the data in the table, graph the demand for wheat and the supply of wheat. Be sure to label the axes of your graph correctly. Label equilibrium price '*P*' and equilibrium quantity '*Q*'.

(c) Why will $3.40 not be the equilibrium price in this market?

(d) Why will $4.90 not be the equilibrium price in this market?

(e) Now suppose that the government establishes a ceiling price of, say, $3.70 per unit for wheat. Explain carefully the effects of this ceiling price. Demonstrate your answer graphically.

(f) Assume now that the government establishes a supported price of, say, $4.60 per unit for wheat. Explain carefully the effects of this supported price. Demonstrate your answer graphically.

2 Given that the supply curve is fixed, what effect will each of the following have upon the demand for product *B*?

(a) Product *B* becomes more fashionable.

(b) The price of product *C*, a popular substitute for *B*, goes down.

(c) Consumers expect declining prices and falling incomes in the future.

(d) There is a rapid upsurge in population growth.

3 Given that the demand curve is fixed, what effect will each of the following have upon the supply of product *B*?

(a) There is a technological advance in the methods of producing *B*.

(b) There is a decline in the number of firms in the industry that produces *B*.

(c) There is an increase in the prices of resources required to produce *B*.

(d) There is an expectation that the equilibrium price of *B* will be lower in the future than it is currently.

(e) There is a decline in the price of product *A*, a good whose production requires substantially the same techniques and resources as does the production of *B*.

4 Explain and illustrate graphically the effect of:

(a) an increase in income on the demand curve of an inferior good

(b) a drop in the price of product *L* on the demand for substitute product *M*

(c) a decline in income on the demand curve of a normal good

(d) an increase in the price of product *J* on the demand for complementary good *K*.

5 How will each of the following changes in demand and/or supply affect equilibrium price and equilibrium quantity in a competitive market; that is, do price and quantity rise, fall or remain unchanged, or are the answers indeterminate and dependent upon the magnitudes of the shifts in supply and demand? You should draw a supply and demand diagram to verify each of your answers. Try to give practical examples of each of these 8 cases.

(a) Supply decreases, demand remains constant.

(b) Demand decreases, supply remains constant.

(c) Supply increases, demand remains constant.

(d) Demand increases, supply increases.

(e) Demand increases, supply remains constant.

(f) Supply increases, demand decreases.

(g) Demand increases, supply decreases.

(h) Demand decreases, supply decreases.

6 Indicate whether each of the following creates a demand for, or a supply of, French francs in foreign exchange markets:

(a) An Australian importer purchases a shipload of Bordeaux wine.

(b) A French automobile firm decides to build an assembly plant in Sydney.

(c) An Australian college student decides to spend a year studying at the Sorbonne.

(d) A French manufacturer exports machinery to Morocco on an Australian freighter.

(e) An Australian government bond held by a French citizen matures.



1 Critically evaluate: 'In comparing the two equilibrium positions in Figure 3.8a, I note that a larger amount is actually purchased at a higher price. This obviously refutes the law of demand.'

2 Explain the following news from Hull, England: 'The fish market here slumped today to what local commentators called "a disastrous level"—all because of a shortage of potatoes. The potatoes are one of the main ingredients in a dish that figures on almost every cafe menu—fish and chips.'

3 Explain: 'Even though parking meters yield little or no net revenue, they should nevertheless be retained because of the rationing function they perform.'

4 'In the wheat market, demand often exceeds supply and supply sometimes exceeds demand.'

'The price of wheat rises and falls in response to changes in supply and demand.'

In which of these two statements are the terms 'supply' and 'demand' used correctly? Explain.

5 'A rise in the dollar price of yen necessarily means a fall in the yen price of dollars.' Do you agree?

6 Illustrate and elaborate: 'The critical thing about exchange rates is that they provide a direct link between the prices of goods and services produced in all trading nations of the world.'

NOTES

1 In adjusting this definition to the resource market, just substitute the word 'resources' for 'product' and 'businesses' for 'consumers'.

2 Note that we are moving up a stable demand curve for butter for an individual consumer. But the demand for margarine shifts to the right (increases). Given the supply of margarine, this increase in demand will increase its price.

3 While we are moving up a stable demand curve for petrol, the demand for engine oil shifts to the left (decreases).

4 In talking of the resource market, our definition of supply reads: 'a schedule that shows the various amounts of a resource that its owners are willing to supply in the market at each possible price in a series of prices during some specified period'.



A LAST WORD THE GRABBING HAND

Economists frequently, although not always, view government as being a force for good in society. The idea that government, and its constituent components, may be maximising self-interested economic agents, can drastically change our view of government and its intentions.

Much the biggest defect in economics as it is commonly practised is what it assumes about government. Mainstream economics has a detailed and elaborate (if not always entirely convincing) theory about why consumers, workers and firms do what they do. Its thinking about what animates the other main actor in economic life—the government—is in contrast laughably thin.

People often complain that it is simplistic for economics to assume that individuals are rational and self-interested. Of course this is a simplification, but it is an enlightening one, and not flatly contradicted in the real world. The corresponding assumption about government—that the state aims to maximise social welfare—is contradicted by the real world about as flatly as you could wish.

A disinterested observer could describe only a small part of what governments do as even an attempt to improve overall welfare. Judging by their largest interventions (taxes and spending), governments are mainly concerned with redistribution: reducing one group's welfare so as to improve another's (at some net cost overall). As Andrei Shleifer of Harvard University and Robert Vishny of the University of Chicago insist in a new book, *The Grabbing Hand*, the assumption behind most economists' thinking about the role of the state is not even simplistic; it is plain wrong.

There is no comparably elaborated body of thought based on the idea that governments are, like individuals, rational and self-interested—in other words, that they are chiefly concerned with winning power, exercising power and hanging on to power. Some great minds (James Buchanan, Gordon Tullock and the late Mancur Olsen, to name three) have applied themselves to public-choice theory, as the

branch of the subject devoted to this insight is known, but, so far as mainstream thinking is concerned, to disappointingly little effect.

Why is this? There is (of course) a public-choice explanation: neither producers nor consumers of economics (economists and politicians, respectively) have much interest in seeing such truths exposed. But another reason for the limited influence of public-choice theory is that it has often made itself seem irrelevant. The public-choice literature has taken such a cynical view of politics that it regards the state as beyond redemption. Its prescriptions often boil down to the demand that governments withdraw from almost every aspect of economic life. As a result, the insights of public-choice theory have been too little applied to improving government, as opposed to demanding that it be largely abolished.

Messrs Shleifer and Vishny are trying to put that right. They believe their 'grabbing-hand' model is a distinctive alternative both to the 'helping-hand' (market-failure correcting) model of mainstream thinking and to the invisible-hand paradigm of the public-choice school. It is certainly closer to the second than to the first. But what divides it from the invisible-hand approach is its prescriptive content—its emphasis on tilting the balance of political costs and benefits in order to bring public and private interests into closer alignment, leading, they hope, to better (but not always less) government.

Consider a specific example: privatisation. How do the three approaches differ in their thinking? Helping-hand economists are not much interested. Ownership alone matters little, they say: what counts is choosing the right managers and giving them the appropriate incentives. Also, privatisation is bad if it creates a monopoly. Put these together and the prescription is 'be cautious', or even 'don't bother—focus on what matters'.

The invisible-hand approach says that, at least in countries where private markets are established, the government has no business owning any enterprise. The government should simply get out: privatise, and let the market do the rest.

Messrs Shleifer and Vishny agree that ownership matters, that it is no accident that state-owned enterprises are nearly always badly run, and that privatisation is a good thing. But they are interested in details that the invisible-hand people often find too disgusting to contemplate. How did the firm come to be nationalised in the first place? Whose private interests does public ownership serve? How, as a matter of strategy, are these interests to be disenfranchised? Most important, how can privatisation be organised in such a way that, first, it becomes politically possible and, second, the new pattern of private interests supports rather than undermines the public interest?

Having set out this agenda, the authors gather a series of papers published over the past few years to show what kind of results one can expect. The range of material is impressive: the chapters deal with the growth of European cities before the Industrial Revolution, corruption in post-Soviet Russia, privatisation in Eastern Europe, local government in the United States, and more. The authors keep technical apparatus to a minimum. By any standards, let alone the debased standard of most modern economics, the essays are lucid and literate.

Grabbing-hand economics is at best a work in progress—a work barely begun, in fact—rather than an established school of thinking. And it might have been more accurate (though duller) to call it applied public-choice economics, rather than to come down with a touch of third-way syndrome (not this, not that, but something quite new and wonderful). No matter. Good luck to Messrs Shleifer and Vishny. If they are to make a perceptible dent in the reflex statism of orthodox economics, they will need it.

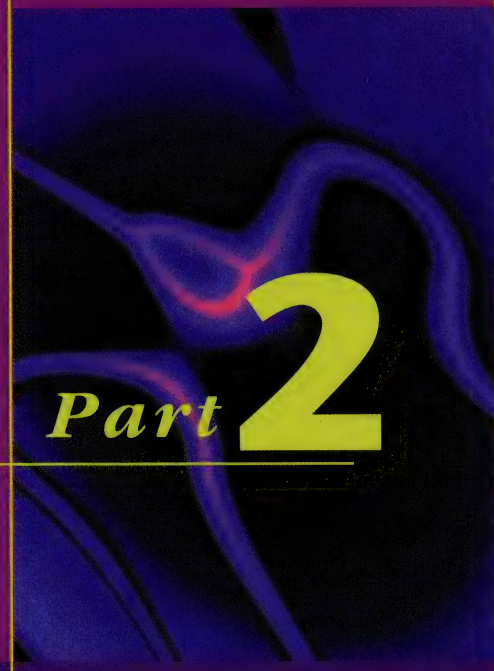
SOURCE: Economics focus: 'The Grabbing Hand', Economist, *13 February 1999.*

Questions

1 How does the grabbing-hand view of government differ from that of the helping-hand model of government? How does the grabbing-hand view of government differ from that of the public-choice school's model of government? Which of the schools of thought does it have most in common with? Explain.

2 What issues does the article suggest we should consider when examining issues such as the privatisation of state-owned enterprises? Why are these likely to be important?

3 Although in agreement with the public-choice view that privatisation of government-owned enterprise is appropriate, does the grabbing-hand view of government provide a more realistic approach to getting the process underway and completed? Explain.



Part 2

MACROECONOMIC ACTIVITY AND FISCAL POLICY



Chapter 4 AUSTRALIA'S NATIONAL AND INTERNATIONAL ACCOUNTS

INTRODUCTION

In Part 1 of this book we asserted that Australia's form of mixed capitalism does not consistently provide for the attainment of society's economic goals (see Chapter 1). Of these goals, full employment, price-level stability, external balance and economic growth constitute macroeconomic goals.

In Part 2 we will deal at length with full employment, price-level stability and external balance. Our interests will be many: the measurement of employment, production and income levels in the economy; the relationship between these variables and the price level and external balance; the impact of Australia's trade relationships with the rest of the world on the level of activity and employment; movements in the levels of output, employment and prices and in the structure of our external balance over time; and the use of public policy to manage, if needed, the levels of employment, production and income so as to achieve our economic goals.

Economic growth will be analysed separately in Part 4.

In this chapter we focus on a set of accounting techniques that will help us to measure the level of production achieved by the economy and the structure of our exchanges with the rest of the world. In Chapter 5 we will examine the economic fluctuations that have characterised the Australian economy, emphasising the effects of unemployment and inflation, and the problems in the structure of our external accounts. Then, in Chapters 6, 7 and 8 we will explain those factors that determine the levels of employment and production in our economy. Finally, in Chapter 9 we will explore how fiscal policy—the changing of government expenditure and tax decisions—could be used to help stabilise output, employment and the price level, and to achieve external balance. Chapter 9 also includes a related discussion of the public debt.

LEARNING OBJECTIVES

- **Describe the major components of Australia's national accounts and the measurement and construction of gross domestic product (GDP).**
- **Develop an understanding of the relationship between the income, expenditure and production measures of GDP.**
- **Discuss the differences between money and real GDP.**
- **Explain how GDP figures can be adjusted to account for changes in the price level.**
- **Examine the limitations of GDP as a measure of social welfare.**
- **Analyse and interpret the nature and structure of the balance of payments (BOP) accounts.**
- **Examine the consequences of the structure of the BOP accounts for achieving external balance.**

MEASURING THE ECONOMY'S PERFORMANCE—THE NATIONAL ACCOUNTS

Our present task is to define and explain a group of public or national income accounting concepts that have been designed to measure the overall production performance of the economy.

Why should we bother with such a project? Because public accounting does for the economy as a whole what private accounting does for the individual business enterprise or, for that matter, for the household. The individual business owner is vitally interested in knowing how the firm is doing, but the answer is not always obvious.

Measurement of the firm's flow of income and expenditures is needed to assess the firm's operations for the current year. With this information available, the business owner can gauge the economic health of the firm. If things are doing well, the firm can use accounting data to explain this success. It may be that costs are down or that sales and product prices are up, resulting in larger profits. If things are going badly, accounting measures may discover the immediate causes. Also, by examining its accounts over a period of time, the business owner can detect growth or decline for the firm and some indication of the immediate causes. All this information is invaluable in helping the business executive to make intelligent policy decisions.

A system of national income accounting does much the same thing for the economy as a whole: it allows us to keep a finger on the economic pulse of the nation—to measure the level of production in the economy at some point in time, and to explain the immediate causes of that level of performance. Further, by comparing the national income accounts over a period, we can plot the long-run course the economy has been following; the growth or stagnation of the economy will show up in the national income accounts. Finally, the information supplied by the national income accounts provides a basis for the formulation and application of public policies designed to improve the performance of the economy; without the national income accounts, economic policy would be

based on guesswork. National income accounting allows us to keep tabs on the economic health of society and to formulate, intelligently, policies that will improve that health.

Concept highlights

- A system of national accounts provides a measure of the operation of the economy, in much the same way that private accounting assesses the operation of a business.
- In the short run, a system of national accounts assists us to explain the economy's performance and provides a source of information for formulating economic policy. In the long run we can track the growth or stagnation of the economy.

GROSS DOMESTIC PRODUCT

Gross domestic product (GDP): the total market value of all final goods and services produced in the economy during a specific period.

It is possible to use many different measures to evaluate the economic wellbeing of society. However, the most common and best available indicator of an economy's health is its annual total output of goods and services or, as it is sometimes called, the economy's aggregate output. The basic public accounting measure of the total output of goods and services is called the **gross domestic product (GDP)**. The definition of GDP is very explicit and requires considerable development. However, this does not mean that we cannot start with a precise definition: GDP is the total market value of all final goods and services produced in the economy during a specific period.[1] The specified period is usually a year, but may be a quarter (three months).

As indicated, an explanation of the full meaning of our definition of GDP now requires considerable comment.

A MONETARY MEASURE

GDP measures the market value of a period's output in monetary terms. GDP must be a monetary measure if we are to compare the varied collections of goods and services produced in different periods and get a meaningful idea of their relative worth. Put simply, if the economy produces three oranges and two apples in year 1 and two oranges and three apples in year 2, in which year is output greater? There is no answer to this question until price tags are attached to each of the products as indicators of society's evaluation of their relative worth. The problem is resolved in Table 4.1, where it is assumed that the money price of the oranges is 40 cents, the price of apples is 45 cents, and that prices remain fixed. It can be concluded that the output for year 2 is greater than that for year 1. Why? Because society values year 2's output more highly when measured at fixed prices; society is willing to pay more for the collection of goods produced in year 2 than for goods produced in year 1.

Table 4.1 Comparing heterogeneous outputs by using money prices (hypothetical data)

Year	Annual outputs	Market value
1	3 oranges and 2 apples	3 at 40 cents + 2 at 45 cents = $2.10
2	2 oranges and 3 apples	2 at 40 cents + 3 at 45 cents = $2.15

AVOIDING DOUBLE-COUNTING

Final goods and services: goods and services that are being purchased for final use and are not to be subject to further processing, manufacturing or resale.

Intermediate goods and services: goods and services that are subject to further processing, manufacturing or resale.

Intermediate consumption: the cost of intermediate goods and services.

Double-counting: the separate inclusion of intermediate consumption in the value of final goods and services. The value of final goods and services includes any intermediate consumption required during the production process.

Value added: the market value of a firm's output less the value of its intermediate consumption.

To measure total output accurately, all goods and services produced in any given year must be counted once, but not more than once. Only the value of **final goods and services** will be counted. Final goods and services are goods and services that are being purchased for final use and are not to be subject to further processing, manufacturing or resale. **Intermediate goods and services**, on the other hand, are goods and services that *are* subject to further processing, manufacturing or resale. The cost of these intermediate goods and services is known as **intermediate consumption**.

Most products go through a series of production stages before reaching a market. Throughout these production stages, parts or components of most products are bought and sold many times; these transactions represent part of the cost of the different stages of production. To avoid counting the parts of final products that are sold more than once, GDP includes only the market value of the final goods and services and ignores the value of intermediate goods and services (intermediate consumption). Why? Because the value of final goods and services includes any intermediate consumption required during the production process. To count intermediate consumption separately would involve **double-counting** and provide an exaggerated estimate of GDP.

An example will clarify this point. Suppose there are five stages of production in getting a suit manufactured and into the hands of a consumer who, of course, is the ultimate or final user. As Table 4.2 indicates, firm A, a woolgrower, provides $40 worth of wool to firm B, a wool processor. Firm A pays out the $40 it receives in wages, rents, interest and profits. Firm B processes the wool and sells it to firm C, a suit manufacturer, for $160. What does firm B do with this $160? As noted, $40 goes to firm A, and the remaining $120 is used by B to pay wages, rents, interest and profits for the resources needed in processing the wool. The manufacturer sells the suit to firm D, a clothing wholesaler, who in turn sells it to firm E, a retailer, and then, at last, it is bought for $400 by a consumer, the final user of the product. At each stage, the difference between what a firm has paid for the product and what it receives for its sale is paid out as wages, rent, interest and profits for the resources used by that firm in helping to produce and distribute the suit.

The basic question is this: how much should we include in GDP in accounting for the production of this suit? Just $400, the value of the final product! Why? Because this figure includes all the intermediate transactions leading up to the product's final sale. It would be a gross exaggeration to sum all the intermediate sales figures and the final sales value of the product in column 2 and add the entire amount, $1090, to GDP. This would be a serious case of double-counting; that is, counting the final product and the sale and resale of its various parts in the multi-stage production process.

To avoid double-counting, national income accountants could calculate only the **value added** by each firm. Value added is the market value of a firm's output (its revenue) less the value of the inputs it has purchased from others (its intermediate consumption). So, for example, we note in column 3 of Table 4.2 that the value added by firm B is $120, the difference between the $160 value of its output minus the $40 it paid for the inputs provided by firm A. By adding together the values added by the five firms in Table 4.2, we can accurately determine the total value of the suit. Similarly, by calculating and summing the value added by all firms in the economy, national income accountants could determine GDP.

Table 4.2 Value added in a five-stage process to produce suits (hypothetical data)

(1) Stage of production	(2) Sales value of materials or product ($)	(3) Value added ($)
Firm A, wool grower	40	40
Firm B, wool processor	160	120
Firm C, suit manufacturer	220	60
Firm D, clothing wholesaler	270	50
Firm E, retail clothier	400	130
Total sales volume	**1090**	
Value added (total income)		**400**

GDP EXCLUDES NON-PRODUCTIVE TRANSACTIONS

Non-productive transactions: transactions where no production of goods or services occurs. This includes purely financial transactions and second-hand sales.

GDP attempts to measure the annual production of the economy. In so doing, the many **non-productive transactions** that occur each year must be carefully excluded.

Non-productive transactions are of two major types:

1. purely financial transactions
2. second-hand sales.

FINANCIAL TRANSACTIONS

Purely financial transactions in turn are of three general types: public transfer payments; private transfer payments, and the buying and selling of shares or securities. Public transfer payments are the social security payments government makes to particular households. The basic characteristic of these disbursements is that recipients make no contribution to current production in return for them. Thus, to include them in GDP would be to overstate this year's production.

Private transfer payments, for example to a university student from a wealthy relative, do not involve production, but simply the transfer of funds from one private individual to another. The buying and selling of shares, for example, is also excluded from GDP. Stock-market transactions simply involve the swapping of paper assets. As such, these transactions do not directly involve current production. (It should be noted, however, that by getting money from the hands of savers into the hands of spenders, some of these security transactions may indirectly create spending, which does account for output.)

SECOND-HAND SALES

The reason for excluding second-hand sales from GDP is fairly obvious: such sales either reflect no current production, or they involve double-counting. For example, suppose you sell your 1990 Ford to a neighbour. This transaction

would be excluded in determining GDP because no current production is involved. The inclusion in this year's GDP of the sales of goods produced some years ago would be an exaggeration of this year's output. Similarly, if you purchased a brand new Ford and resold it a week later to your neighbour, we should still want to exclude the resale transaction from the current GDP. Why? Because when you originally bought the new car, its value was included in GDP. To include its resale value would be to count it twice.

Note, however, that when we say that we exclude non-productive transactions, we are not excluding the value added in the form of brokerage fees, for example on share purchases and sales. We are simply excluding those parts of these transactions that do not generate a new flow of income.



Concept highlights

- Gross domestic product (GDP) is a basic measure of the market value of all final goods and services produced in a year.
- In measuring GDP we should avoid:
  - adding in the value of intermediate consumption, which would involve double-counting
  - counting non-productive transactions that are purely financial in nature—that part of the transaction that does not generate new income
  - counting second-hand sales.

Business IMPLICATION

WHO REALLY USES THE NATIONAL ACCOUNTS?



Students often complain that the study of the national accounts is dry. In fact, 'boring' is a commonly used word. The problem with this viewpoint is that it completely ignores the uses to which the national accounting (and other Australian Bureau of Statistics data) may be put. Some of these uses are both interesting and, potentially, profitable.

'Glamour' (read: highly paid and often interesting) positions such as business and strategic analyst, equity analyst, policy analyst, trade analyst, and currency and commodity trader all require individuals who can access and use economic data, much of which is from the national accounts. The reason? Economic data, especially newly released economic data, is part of the information set that analysts use to pick both short-term and long-term trends in important markets and sectors of the economy. This may be done at both the national and international levels. Analysts also use new information to forecast possible policy changes by key government departments, such as Treasury, and semi-government authorities, such as the Reserve Bank.

New information influences prices in many of our key financial markets. Thus, you should now appreciate why the analysts and traders mentioned above wait, often with great anticipation, for another 'boring' statistic on inflation, economic growth and the size of the current account deficit to be released before making their trading decisions and forecasts.

TWO SIDES TO GDP

Given a general understanding of the meaning of GDP, we now raise this question: how can the market value of total output—or for that matter, any single unit of output—be measured? How can we measure, for example, the market value of a new wool jumper?

This can be done in two ways. First, we can just look at how much a consumer, as the final user, spends in obtaining it; this is an expenditure approach. Second, we can add up all the wage, rent, interest and profit incomes created in the production of the jumper. This is simply the value-added approach we spoke of earlier, an income approach. These are, indeed, two ways of looking at the same thing. What is spent on a product is received as income by those who contributed to its production. If $60 is spent on the jumper, that is necessarily the total amount of income derived from its production.

The equality of the expenditure on a product and the income derived from its production is guaranteed, because profit income serves as a balancing item. Profit—or loss—is the income that remains after wage, rent and interest incomes have been paid by the producer. If the wage, rent and interest incomes the firm must pay in getting the jumper produced are less than the $60 expenditure for the jumper, the difference will be the firm's profits.[2] Conversely, if wage, rent and interest incomes exceed $60, profits will be negative; that is, losses will be realised, to balance the expenditure on the product and the income derived from its production.

An analogous line of reasoning is also valid for the output of the economy as a whole. There are two different ways of looking at GDP. One is to look at GDP as the sum of all the expenditures involved in taking that total output off the market. This is called the **expenditures approach**. The other is to look at it in terms of the income derived or created from the production of the GDP. This is called the **income approach** to the determination of GDP.

Expenditures approach to GDP: measures GDP as the sum of all the expenditures involved in taking that total output off the market.

Income approach to GDP: measures GDP as the sum of the income derived or created from the production of the GDP.

A closer analysis of these two approaches will reveal that they amount to this: GDP can be determined either by adding up all that is spent on this year's total output, or by summing up all the incomes derived from the production of this year's output. Putting this in the form of a simple equation, we can say that:

the amount spent on this year's total output	=	the money income derived from the production of this year's output

In fact, this is more than an equation: it is an identity. Buying (that is, spending money) and selling (that is, receiving money income) are actually two aspects of the same transaction. What is spent on a product is income to those who have contributed their human and property resources in getting that product produced and to market.

For the economy as a whole, we can expand the above identity to read as in Table 4.3. This summary statement simply tells us that all final goods produced in the Australian economy are purchased either by the three domestic sectors—households, businesses and government—or by foreign nations. It also shows us that the total receipts that businesses acquire from the sale of total output are allocated among the various resource suppliers as wage, rent, interest and profit incomes. (Later we will explain two additional non-income allocations of total receipts and why we have used net export expenditures.) Using this summary as a point of reference, let us point out in some detail the meaning and significance of the various types of expenditures and the incomes derived from them.

Table 4.3 The income and expenditures approach to GDP

Expenditures approach		Income approach
Consumption expenditures by households *plus* Investment expenditures by businesse *plus* Government purchases of goods and services *plus* Net export expenditures	= GDP =	Wages *plus* Rents *plus* Interest *plus* Profits *plus* Non-income charges or allocations

THE EXPENDITURES APPROACH TO GDP

To determine GDP through the expenditures approach, we must add up all types of spending on final goods and services. But our national income accountants have more sophisticated terms for the different types of spending than the ones we have employed in Table 4.3. We must therefore familiarise ourselves with the national accounting measures, and relate them to the simplified concepts that we will be using throughout our study of macroeconomics.

PERSONAL CONSUMPTION EXPENDITURES (*C*)

Personal consumption expenditures (C): expenditures by households on durable consumer goods, non-durable consumer goods, and on services.

Personal consumption expenditures, or *private final consumption expenditure*, as it is termed in the national accounts, is expenditures by households on durable consumer goods (cars, refrigerators, videos, and so on), non-durable consumer goods (bread, milk, beer, cigarettes, shirts, toothpaste), and on services (of lawyers, doctors, mechanics, cleaners). We shall use *C* to designate the total of these expenditures. Note that this total will include expenditure on imported as well as Australian-produced goods and services. We will keep this in mind later when we are trying to calculate total expenditure on Australian goods. Some adjustment will have to be made for imports.

GROSS PRIVATE INVESTMENT (*I*)

Gross private investment (I): private gross fixed capital expenditure *plus* increases in stocks.

Gross private investment is a seemingly complicated term that refers to all investment spending by Australian business firms. It is composed of private gross fixed capital expenditure *plus* increases in stocks (private non-farm and farm) from our national accounts. We shall use *I* to refer to the total of these expenditures.

What is included as investment spending? Basically three things:

1 all final purchases of machinery, equipment and tools by business enterprises

2 *all* building and construction

3 changes in stocks (or inventories).

This obviously entails more than we have imputed to the term 'investment' so far. Hence, we must explain why each of these three items is included under the general heading of gross private investment.

The reason for inclusion of the first group of items is apparent. This is simply a restatement of our original definition of investment spending as the purchase of tools, machinery and equipment. The second item—all construction—merits some explanation. It is clear that the building of a new factory, warehouse or computer is a form of investment. Why include residential construction as investment rather than consumption? The reason is this: apartment buildings are clearly investment goods because, like factories, they are income-earning assets. Other residential units that are rented are, for the same reason, investment goods. Further, owner-occupied houses are classified as investment goods because they could be rented out to yield a money income return, even though the owner does not choose to do so. For these reasons, all residential construction is considered as investment. Finally, why are changes in stocks (or inventories) counted as investment? Because an increase in inventories is, in effect, 'unconsumed output', and that is precisely what investment is!

Stock changes as investment

Remembering that GDP is designed to measure total current *output*, we must certainly make an effort to include in GDP any products that are produced but not sold this year. If GDP is to be an accurate measure of total output, it must include the market value of any additions to stocks that accrue during the year. Were we to exclude an increase in stocks, GDP would understate the current year's total output. If businesses have more goods on their shelves and in their warehouses at the end of the year than they had at the start, the economy has produced more than it has consumed during this particular year. This increase in inventories obviously must be added to GDP as a measure of *current* production.

What about a decline in inventories? This must be subtracted when measuring GDP, because in such a situation the economy sells a total output that exceeds current production, the difference being reflected in an inventory reduction. Some of the GDP taken off the market this year reflects not current production but, rather, a drawing down of inventories that were on hand at the beginning of this year. And the inventories on hand at the start of any year's production represent the production of previous years. Consequently, a decline in stocks in any given year means that the economy has consumed more than it has produced during the year; that is, society has consumed all this year's output plus some of the inventories inherited from the previous years' production. Remembering that GDP is a measure of the current year's output, we must omit any consumption of past production—that is, any drawing down of inventories—in determining GDP.

A final point: just as we noted that the total expenditure on consumption includes expenditure on imports, so may gross investment expenditure include imported capital equipment.

Non-investment transactions

We have discussed what investment is; it is equally important to emphasise what investment is *not*. Specifically, investment does not refer to the transfer of paper assets or second-hand tangible assets. The buying of shares, for example, is excluded from the economist's definition of investment, because such purchases merely transfer the ownership of existing assets. The same holds true for the resale of existing assets. Investment is the construction or manufacture of new capital assets. It is the creation of such earning assets that gives rise to jobs and income, not the exchange of claims to existing capital goods.

THE DISTINCTION BETWEEN GROSS AND NET INVESTMENT

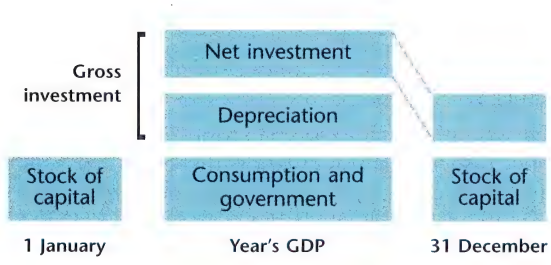
We have broadened our concepts of investment and investment goods to include purchases of machinery and equipment, all construction and changes in inventories. Now let us focus our attention on the two modifiers, 'gross' and 'private', which national income accountants see fit to use in describing investment. The second term simply tells us that we are talking about spending by private business enterprises as opposed to government (public) agencies.

Net private investment: additions to the level of the economy's stock of investment goods made by non-government enterprises.

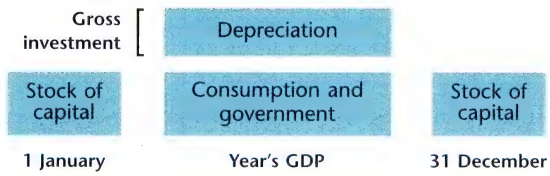
The term 'gross', however, cannot be disposed of so easily. Gross private investment includes the production of all investment goods—those that are to replace the machinery, equipment and buildings used up in the current year's production (known as consumption of fixed capital, or depreciation), plus any net additions to the economy's stock of capital. Gross investment includes both replacement and added investment. On the other hand, we reserve the term **net private investment** to refer only to the added investment of non-government enterprises that has occurred in the current year.

Net investment and economic growth

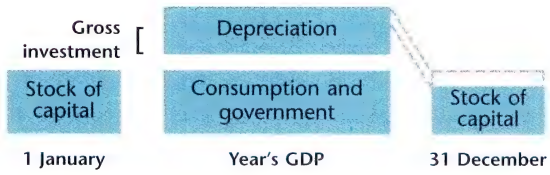
Gross investment, as a source of demand, is clearly important in determining output and incomes in the short run. However, the relationship between gross investment and depreciation provides a good indicator of whether our economy is expanding, static or declining. Figure 4.1 illustrates these three cases.



a. An expanding economy



b. A static economy



c. A declining economy

FIGURE 4.1
Expanding, static and declining economies

In an expanding economy, as in (a), gross investment exceeds depreciation, which means that the economy is making a net addition to its stock of capital facilities. In a static economy, as in (b), gross investment precisely replaces the capital facilities depreciated in producing the year's output, leaving the stock of capital goods unchanged. In a declining economy, as in (c), gross investment is insufficient to replace the capital goods depreciated by the year's production. As a result, the economy's stock of capital declines.

Expanding economy

When gross investment exceeds depreciation, as in Figure 4.1(a), the economy is obviously expanding in the sense that its productive capacity—as measured by its stock of capital goods—is growing. More simply, net investment is a positive figure in an **expanding economy**. Increasing the supply of capital goods, you will recall, is a basic means of expanding the productive capacity of the economy (see Chapter 2).

Static economy

A **stationary**, or **static**, **economy** reflects the situation in which gross investment and depreciation are equal. This means that the economy is static; it is producing just enough capital to replace what is consumed in producing the year's output—no more and no less. Figure 4.1(b) represents the case of a static economy.

Declining economy

The unhappy case of a **declining economy** arises whenever gross investment is less than depreciation—that is, when the economy uses up more capital in a year than it manages to produce. Under such circumstances, net investment will be a negative figure—the economy will be 'disinvesting'. Depressions foster such circumstances. During bad times, when production and employment are at a low ebb, the nation has a greater productive capacity than it is currently utilising. Hence there is little or no incentive to replace depreciated capital equipment, much less add to the existing stock. Depreciation is likely to outweigh gross investment, with the result that the nation's stock of capital is less at the end of the year than it was at the start. Figure 4.1(c) illustrates the case of a declining economy.

The relationship between investment and an economy's long-run economic growth will be taken up again in Chapter 16.

GOVERNMENT PURCHASES OF GOODS AND SERVICES (*G*)

This classification of expenditures includes all government spending (federal, state and local) on the finished products of businesses, and all direct purchases of resources (labour, in particular) by government. However, it excludes all government transfer payments, because such outlays, as previously noted, do not reflect any current production.

Government purchases of goods and services (G): the sum of government final consumption expenditure, government gross fixed capital expenditure, and the increase in stocks of authorities.

Government purchases of goods and services are broken down into two types of components by the national income statisticians; one is a *consumption* component and the other an *investment* component. Government final consumption expenditure includes expenditure on goods and services (including labour services) other than on fixed assets or stocks. Government gross fixed capital expenditure (public enterprises and general government) generally includes major sums spent on capital goods, such as roads. To this we add the increase in stocks of authorities (public marketing and other public authorities) to get the total of government investment expenditure. The division of government expenditures between consumption and investment categories can be somewhat arbitrary, with, for example, government purchases of military equipment being included in government final consumption expenditure. We will use G to refer to the total of government expenditures. Again, this total will include expenditure on imported items.

NET EXPORTS (*NX*)

How do Australian international trade transactions enter into national income accounting? We can best explain it in this way: first, remember that we are trying to add up all spending in Australian markets that accounts for, or induces the production of, goods and services in the Australian economy. A little reflection will lead to the conclusion that spending by foreigners on Australian goods and services will account for Australian output, as will spending by Australians. Hence, we want to add in what foreigners spend on Australian goods and services; that is, we want to add in the value of Australian exports of goods and services (X) in determining GDP by the expenditures approach.

Net exports: the difference between the value of our exports and imports ($X - M$).

On the other hand, as we have previously noted, a portion of the totals of consumption, investment and government purchases is for goods and services that have been imported—that is, produced overseas—and therefore do not reflect productive activity in Australia. The total value of imports of goods and services (M) must be estimated and subtracted from $C + I + G + X$ to avoid an overstatement of total production in Australia.[3] The difference between the value of our exports and imports ($X - M$) represents **net exports**.

Net exports of goods and services (or, more simply, net exports) is the amount by which foreign spending on Australian goods and services exceeds Australian spending on foreign goods and services. Net exports represent the net impact on our production and incomes of our international trade transactions. For example, if foreigners buy $69 000 million worth of Australian exports and Australians buy $67 500 million worth of foreign imports in a given year, net exports would be *plus* $1500 million. It must also be emphasised that our definition of net exports might result in a negative figure. If foreigners spent $65 200 million on Australian exports and Australians spent $65 700 million on foreign imports, our 'excess' of foreign spending over Australian spending would be *minus* $500 million. The letters *NX* will be used to designate net exports.

EXPENDITURES APPROACH SUMMARY

The four categories of expenditures that we have discussed—personal consumption expenditures (C), government expenditures on goods and services (G), gross private investment (I) and net exports (NX)—are comprehensive. They include all possible types of spending. Added together, they measure the market value of the year's output or, in other words, the GDP, that is:

$$C + I + G + NX = \text{GDP}$$

In the national accounts, this approach to measuring GDP is referred to as GDP(E). As shown in Table 4.4, GDP(E) for 1998–99 amounted to $592 844 million.

Table 4.4 The income statement for the economy, 1998–99 ($ million)

Expenditures approach		**Income approach**	
Final consumption expenditure—		Compensation of employees	287 441
General government	107 944	Gross operating surplus—	
Households	350 598	Non-financial corporations: private	89 562
Gross fixed capital expenditure—		Non-financial corporations: public	19 910
Dwellings	31 385	Financial corporations	13 818
Other buildings and structures	23 207	General government	11 278
Machinery and equipment	43 375	Dwellings owned by persons	48 055
Livestock	1 660	Gross mixed income	58 216
Intangible fixed assets	9 656	Taxes less subsidies on production and imports	68 131
Ownership transfer costs	7 513	Statistical discrepancy (I)	−3 567
Public corporations	11 194		
General government	13 505		
Change in inventories—			
Private non-farm	5 167		
Farm	−411		
Public authorities	444		
Gross national expenditure	*605 238*		
Exports of goods and services	111 891		
less: Imports of goods and services	126 480		
Statistical discrepancy (E)	2 195		
Gross domestic product: GDP(*E*)	**592 844**	**Gross domestic product: GDP(*I*)**	**592 844**

SOURCE: Australian Bureau of Statistics, Australian National Accounts: National Income, Expenditure and Product, *ABS Cat. No. 5206.0.*

THE INCOME APPROACH TO GDP

How was this $592 844 million of expenditures allocated or distributed as income? It would be most convenient if we could simply say that the total expenditures on the economy's annual output flow to households as wage, rent, interest and profit incomes. Unfortunately, the picture is complicated somewhat by two non-income charges against the value of total output, or GDP(I), as the income measure is denoted in the national accounts. These are:

1. depreciation allowances
2. indirect taxes.

COMPENSATION OF EMPLOYEES

This largest income category comprises primarily the wages and salaries that are paid by businesses and government to suppliers of labour. It also includes an array of wage and salary supplements, in particular payments by employers into superannuation funds, direct pensions, compensation payments, etc. These wage and salary supplements are a part of the employer's cost of obtaining labour and therefore are treated as a component of the firm's total wage payments.

GROSS OPERATING SURPLUSES

Although we have so far isolated the wage component of our income stream, unfortunately the other components (see Table 4.3), such as profits, rents and interest, are not as easily isolated in a statistical way. Instead, the Australian national accounts list gross operating surplus items (see Table 4.4) for four different categories of enterprise as well as for dwellings owned by persons.

An enterprise's gross operating surplus (GOS) is the excess of its gross output value over the sum of intermediate consumption, wages, salaries and supplements and indirect taxes less subsidies. Net operating surplus is then calculated by subtracting depreciation allowances from operating surplus. What happens to this net surplus? It is, after any payable company income taxes have been paid, largely paid out to others as interest or dividend payments. That part of surplus not paid out in some form is undistributed income, or retained profit. The four categories of enterprise listed in Table 4.4 as having a gross operating surplus are private trading enterprises, public trading enterprises, financial enterprises, and general government.

We can see that the gross operating surpluses include major payments of the profit, rent and interest types listed in Table 4.3, as well as the component for depreciation. Although we are not able to separate incomes neatly into the items wages, profits, rents and interest, these categories are the most useful conceptual way of thinking about the income approach to GDP.

Depreciation allowances

Depreciation: the annual charge that estimates the amount of capital equipment used up in each year's production.

The useful life of most capital equipment extends far beyond the year of purchase. Actual expenditures for capital goods and their productive life are not synchronised in the same accounting period. Hence, to avoid gross understatement of profit and therefore of total income in the year of purchase, and overstatement of profit and of total income in succeeding years, individual businesses estimate the useful life of their capital goods and allocate the total cost of such goods more or less evenly over the life of the machinery. The annual charge that estimates the amount of capital equipment used up in each year's production is called **depreciation**. Depreciation is essentially a bookkeeping entry designed to provide a more accurate statement of profit income and, hence, total income provided by a firm in each year.

If profits and total income for the economy as a whole are to be stated accurately, a gigantic depreciation charge for the economy as a whole must be made against the total receipts of the business sector. This depreciation charge is called a *capital consumption allowance*. Why? Because that is exactly what it is—an allowance for capital goods that have been 'consumed' in the process of producing this year's GDP.

It is this huge depreciation charge that constitutes the previously noted difference between gross and net investment. For present purposes, the significance of this charge lies in the fact that it claims a part of the business sector's receipts, which is, therefore, not available for income payments to resource suppliers. In real terms—that is, in terms of physical goods and services—the depreciation allowance tells us in effect that a portion of this year's GDP must be set aside to replace the machinery and equipment used up in accomplishing its production. In other words, all of GDP cannot be consumed as income by society without impairing the economy's stock of productive facilities.

TAXES LESS SUBSIDIES ON PRODUCTION AND IMPORTS

Indirect taxes: sales taxes, excise taxes, licence fees and customs duties. Business firms treat these taxes as costs of production and therefore add them to the prices of their products.

This complicating non-income charge arises because government levies certain taxes, called **indirect taxes**, which business firms treat as costs of production and therefore add to the prices of their products. Such taxes include sales taxes, excise taxes, licence fees, customs duties, and so on. We can think of it in this way: a firm produces a product designed to sell at, say, $1. As we have seen, the production of this item creates an equal amount of wage, rent, interest and profit incomes. But now, say, government, in need of revenue to finance its activities, imposes a 5 per cent sales tax on all products sold at retail. The retailer merely adds this 5 per cent to the price of the product, raising its price from $1 to $1.05 and shifting the burden of the sales tax to consumers.[4]

Obviously, this 5 per cent of total receipts that reflects the tax must be paid out to government before the remaining $1 can be paid to households as wage, rent, interest and profit incomes. Government, in effect, is a preferred creditor. Further, this flow of indirect business taxes to government is not earned income, because government contributes nothing directly to the production of the good in return for these sales tax receipts. We must be careful to exclude indirect taxes when figuring the total income earned in each year by the factors of production. Note, further, that we deduct from indirect taxes negative indirect taxes, or **subsidies** that are made by general government to business firms.

Subsidies: payments to businesses to encourage production of a particular commodity or use of a particular resource; effectively negative indirect taxes.

Table 4.4 summarises our detailed discussions of both the expenditures and income approaches to GDP. The reader will recognise that Table 4.4 is merely a gigantic income statement for the economy as a whole. The left-hand side tells us what the economy produced in 1998–99 and the total receipts derived from that production. The right-hand side indicates how the income derived from the production of 1998–99 GDP was allocated. We can determine GDP either by adding up the four types of expenditures on final goods and services or by adding up the categories of income and non-income charges that stem from that output's production. Because output and income are two sides of the same coin, the two sums should match.

STATISTICAL DISCREPANCIES AND GROSS MIXED INCOME

You will notice in Table 4.4 two sizeable figures called 'statistical discrepancy'. These are balancing items and represent the differences between the separate statistical estimates of expenditure and income and the single GDP estimate produced by the ABS. These items reflect the many errors and omissions

incurred as a result of the sampling techniques and approximations used to estimate the figures in some years.

In the right-hand side of Table 4.4, the presence of gross mixed income—a mixture of wage income and gross operating surplus—reflects the difficulty of defining income classifications for some income types. This is especially so for owner-operated small businesses.



Concept highlights

- GDP may be calculated by summing total expenditures on all final output or by summing the income derived from the production of that output.
- By the expenditures approach, GDP is determined by adding consumer purchases of goods and services, gross investment spending by businesses, government purchases of goods and services, and net exports, that is:

  $$GDP = C + I + G + NX$$

- Gross investment can be divided into replacement investment (required due to depreciation of capital) and net investment (the net increase in the stock of capital). Positive net investment is associated with a growing economy, and negative net investment with a declining economy.
- By the income approach, GDP is calculated as the sum of wages, salaries and supplements, gross operating surpluses, gross mixed income and indirect taxes less subsidies.



Business IMPLICATION

WHAT PRICE ECONOMIC DATA?

If economic statistics are really so boring, why do people spend so much money to have access to such data? Why do companies provide such data? They must know something about the value of the data to those who make policy, trading and strategic business decisions. Dow Jones Telerate, Data Resources Incorporated and Datastream are examples of companies that know the value of data and statistics. Their products? Information services: financial, economic and news information, which is used by analysts and market traders around the globe. In the 'need to know', companies spend between several hundred and many thousands of dollars a year just buying basic economic data from these providers, suggesting that it is not just the sellers who think that they have a product with economic value.

MONEY VERSUS REAL GDP

You will recall that GDP, by definition, is the money or market value of all goods and services produced in a year. Money values must be used as a common denominator so we can sum a heterogeneous output into a meaningful total. But this raises a problem: the value of different years' outputs (GDPs) can be compared only if the value of money itself does not change because of inflation or deflation.

Stated differently, inflation or deflation complicates the comparison of figures on the GDP over time, because GDP is a price-times-quantity figure. The raw data from which the national income accountants estimate GDP are the total sales figures of business firms; these figures obviously embody changes in both the quantity of output and the level of prices. This means that a change in either the quantity of total physical output or the price level will affect the size of GDP.

Nominal GDP: GDP measured at current prices; GDP measured at dollars of the period.

Real GDP: GDP at constant prices; GDP figures that have been inflated or deflated to account for price-level changes.

However, it is the quantity of goods produced and distributed to households that affects their standard of living, and not the size of the price tags that these goods bear. The hamburger of 1965 that sold for 20 cents yielded the same satisfaction as did an identical hamburger selling for $3 in 1990. The problem, then, is one of adjusting a price-times-quantity figure so that it will accurately reflect changes in physical output and not changes in prices.

Fortunately, national income accountants have been able to resolve this difficulty: they deflate GDP when prices are rising and inflate it when prices are falling. These adjustments give us a picture of GDP for various years as if prices and the value of the dollar were constant. A GDP figure that reflects current prices, one that is not adjusted for changes in the price level, is called 'GDP at current prices', or **nominal GDP**. Similarly, GDP figures that are inflated or deflated for price-level changes measure GDP at constant prices, or **real GDP**.

THE ADJUSTMENT PROCESS

Some examples will help us understand how GDP figures are adjusted for price changes. First, an exceedingly simple example: let us assume that our economy produces only one good, product *X*, and in the amounts indicated in Table 4.5 for years 1, 2 and 3. An examination of columns 1 and 2 tells us that the nominal GDPs for years 2 and 3, as shown in column 4, greatly overstate the increases in real output occurring in those two years; that is, the monetary measure of production (nominal GDP) does not accurately reflect the actual changes that have occurred in physical output (real GDP). Much of the sharp increase in money GDP over years 2 and 3 is due to the drastic inflation shown in column 2, the remainder being due to the changes in physical output shown in column 1. Both increases in physical output and price increases are reflected in nominal GDP.

Table 4.5 Deflating money GDP (hypothetical data)

Year	(1) Units of output	(2) Price of *X*	(3) Price index (year 1 = 100)	(4) Nominal or current price, GDP (1) × (2)	(5) Real, or constant price, GDP
1	5	10	100	50	50 $(= \frac{50}{1.00})$
2	7	20	200	140	70 $(= \frac{140}{2.00})$
3	8	25	250	200	80 $(= \frac{200}{2.50})$
4	10	30	_____	_____	_____
5	11	28	_____	_____	_____

Now the situation facing our public accountants is this: in gathering statistics from the financial reports of businesses and deriving GDP for years 1, 2 and 3, government accountants come up with the figures for money GDP shown in column 4. They will not know directly to what extent changes in price on the one hand, and changes in quantity of output on the other, have accounted for the given increases in nominal GDP. The accountants will not have before them

the data of columns 1 and 2, but only the data of column 4. Being resourceful, they will attempt to adjust the money GDP figure for price changes. They will do this by deriving a general price index that estimates overall changes in the price level. By expressing this price index as a decimal and dividing it into money GDP, we can obtain real GDP.

In our example, where we are dealing with only one product, a simple single-price index number is all that is required. Such a price index is nothing more than a level measured relative to a fixed point of reference. This point of reference is called the **base year**. By comparing the price level in previous and ensuing years with the price level in the base year, we can tell how much the level of prices has increased or decreased relative to what it was in the base year. Suppose product X sells for \$10 in year 1, \$20 in year 2 and \$25 in year 3, as shown in Table 4.5. Selecting year 1 as the base year, we can express the prices of product X in years 2 and 3 relative to X's price in year 1 through the formula:

Base year: the year containing the reference price level and output, relative to which price levels or outputs in other periods are judged.

$$\text{price index} = \frac{\text{price in any given year}}{\text{price in base year}} \times 100$$

We multiply the relative prices of the two years by 100 to allow ease of calculation of percentage changes in value from that of the base year. Using year 2 as the given year, we find:

$$\text{price index} = \frac{\$20}{\$10} \times 100 = 200$$

and for year 3:

$$\text{price index} = \frac{\$25}{\$10} \times 100 = 250$$

For year 1 the index must be 100, since the given year and the base year are identical. In this case:

$$\text{price index} = \frac{\$10}{\$10} \times 100 = 100$$

These index numbers tell us that the price of product X in year 2 was 200 per cent of what it was in year 1, and in year 3 it was 250 per cent of year 1's price. The index numbers of column 3 can now be used to deflate the inflated money GDP figures of column 4. As already noted, the simplest and most direct method of deflating is to express these index numbers as hundredths—that is, in decimal form—and divide them into the corresponding money GDP:

$$\frac{\text{money GDP}}{\text{price index (as decimal)}} = \text{real GDP}^5$$

GDP figures measure the value of total output in years 1, 2 and 3 as if the price of product X had been constant at \$10 throughout the three-year period. Real GDP thus shows the market value of each year's output measured in terms of constant dollars—that is, dollars that have the same value, or purchasing power, as in the base year. Real GDP is clearly superior to money GDP as an indicator of the economy's productive performance.

To ensure your understanding of the deflating process, you are urged to complete Table 4.5 for years 4 and 5. It is also recommended that you rework the entire deflating procedure, using year 3 as the base year. You will find, by the way, that in this case you must inflate some of the money GDP data, just as we have deflated it in our examples.

INFLATING AND DEFLATING

Consumer price index (CPI): measures the price level of a 'market basket' of a variety of consumer goods and services that are purchased by a 'typical' family.

Implicit price deflator (IPD): a broadly based measure of the average level of prices in the economy, based on consumer goods and services, investment goods, goods and services purchased by government, and goods and services exported and imported.

Table 4.6 provides us with a 'real-world' illustration of the **inflating** and **deflating** processes. Here we are taking actual money GDP figures for selected years and adjusting them with an index of the general price level to obtain real GDP.[6] Note that the base year is 1997–98. Because the long-run trend has been for the price level to rise, the problem is one of increasing, or inflating, the pre-1997–98 figures. This upward revision of money GDP acknowledges that prices were, in general, lower in the years prior to 1997–98 and, as a result, money GDP figures understate the real output of those years. Column 4 indicates what GDP would have been in all these selected years if the 1997–98 price level had prevailed. However, the rising price level has caused the money GDP figures for the post-1997–98 years to overstate real output; hence, these figures must be reduced, or deflated, as in column 4, in order for us to gauge what GDP would have been in 1998–99 if 1997–98 prices had actually prevailed.

In short, while the money GDP figures reflect both output and price changes, the real GDP figures allow us to make a better estimate of changes in real output, because the real GDP figures, in effect, hold the price level constant. The reader should trace through the computations involved in deriving the real GDP figures given in Table 4.6.[7]

It is worth noting that the price level index used in the adjustment process in Table 4.6 is not the **consumer price index (CPI)**, which is usually cited in the news media. The CPI measures the price of a 'market basket' of a variety of consumer goods and services that are purchased by a 'typical' urban family. The index used in Table 4.6 is simply called an **implicit price deflator (IPD)** and is broader than the CPI in that it includes not only consumer goods and services, but also investment goods, goods and services purchased by government, and goods and services exported and imported.

Table 4.6 Adjusting GDP(*E*) for changes in the price level

(1) Year	(2) Implicit price deflator	(3) GDP(*E*) current prices ($ million)	(4) Real or adjusted GDP(*E*) constant 1997–98 prices ($ million) [(3) ÷ (2)] × 100
1989–90	87.4	384 583	440 270
1990–91	90.3	397 056	439 778
1991–92	92.0	406 303	441 505
1992–93	93.4	427 281	457 621
1993–94	94.4	449 666	476 369
1994–95	95.3	474 546	498 124
1995–96	97.6	508 112	520 644
1996–97	98.8	533 632	540 348
1997–98	100.0	565 882	565 846
1998–99	100.4	592 844	590 397

SOURCE: Australian Bureau of Statistics, Australian National Accounts: National Income, Expenditure and Product, *ABS Cat. No. 5206.0.*

Note that Australia has recently moved to a system of chain-price indices to measure changes in the value of real output. These are also used to derive our implicit price deflators. A chain-price index operates in a similar way to our earlier example of the adjustment of nominal GDP to account for shifts in prices. The difference? The weights used, and the base year, are changed each period. While this system is slightly more complex than shown in our simple examples, the principles involved are the same. The result is more accurate measurement of shifts in output, due to smaller changes in the composition of the production being compared on a year-to-year basis.



Concept highlights

- Nominal (or current price) GDP measures each year's output, valued in terms of the prices prevailing in that year. Real (constant dollar) GDP measures each year's output in terms of the prices that prevailed in a specified base year.
- Because it adjusts for price-level changes, real GDP is a superior measure of the level of productive activity.

GDP AND SOCIAL WELFARE

GDP is a reasonably accurate and extremely useful measure of national economic performance. It is not, and was never intended to be, an index of social welfare. GDP is merely a measure of the annual volume of market-oriented activity. And, while GDP may yield a workable impression of material wellbeing, it is a far cry from being a precise indicator of social welfare:

> *... any number of things could make the Nation better off without raising its real [gross product] as measured today: we might start the list with peace, equality of opportunity, the elimination of injustice and violence, better understanding between parents and children and between husbands and wives, and we could go on endlessly.*[8]

There is, nevertheless, a widely held assumption that there should be a strong correlation between real GDP and social welfare; that is, greater production should move society towards 'the good life'. Hence, it is important to understand some of the shortcomings of GDP—some reasons why GDP might understate or overstate real output and why more output will not necessarily make society better off.

NON-MARKET TRANSACTIONS

There are certain productive transactions that do not appear in the market. Hence, GDP as a measure of the market value of output fails to include these productive transactions. Standard examples include the productive services of the homemaker, the efforts of the carpenter who repairs his or her own home, or the work of the erudite professor who writes a scholarly but non-remunerative article. Such transactions are not reflected in the profit and loss statements of business firms and therefore escape the national income accountants, causing GDP to be understated.

LEISURE

Over many years, leisure has increased very significantly. The current average work week in the paid workforce is about 41 hours, compared with 50 hours before World War I. The expanded availability of paid vacations and holidays, particularly since World War II, has significantly reduced work time. Increased leisure has added immeasurably to our wellbeing. Hence, our system of public accounting understates our wellbeing by not directly recognising this. Nor do the accounts reflect the satisfaction—the 'psychic income'—that we might derive from our work.

IMPROVED PRODUCT QUALITY

GDP is a quantitative rather than a qualitative measure. It does not accurately reflect improvements in the quality of products. This is a shortcoming: quality improvement may affect economic wellbeing as much as does the quantity of goods. To the extent that product quality has improved over time, GDP understates improvement in our material wellbeing.

THE COMPOSITION AND DISTRIBUTION OF OUTPUT

Changes in the composition and the allocation of total output among specific households may influence economic welfare. GDP, however, reflects only the size of output and does not tell us anything about whether this collection of goods is 'right' for society. A kitchen knife and a Beethoven compact disc, both selling for $25, are weighted equally in the GDP. And, although the point is a matter for vigorous debate (see Chapter 18 of the companion book *Microeconomics*, 6th edition), some economists feel that a more equal distribution of total output would increase national economic wellbeing. If these economists are correct, a future trend toward a more nearly equal distribution of GDP would enhance the economic welfare of society. A less nearly equal future distribution would have the reverse effect. In short, GDP measures the size of total output but does not reflect changes in the composition and distribution of output that might also affect the economic wellbeing of society.

PER CAPITA OUTPUT

For many purposes the most meaningful measure of economic wellbeing is per capita output. Because GDP measures the size of total output, it may conceal or misrepresent changes in the standard of living of individual households in the economy. For example, GDP may rise significantly, but if population is also growing rapidly, the per capita standard of living may be relatively constant or may even be declining.

GDP AND THE ENVIRONMENT

There are undesirable and much publicised 'gross domestic by-products' that accompany the production and growth of the GDP. These take the form of dirty air and water, car junkyards, congestion, noise and various other forms of environmental pollution.

The spillover costs associated with the production of the GDP are currently not deducted from total output and, hence, GDP overstates our national economic welfare. Ironically, as GDP increases, so do both pollution and the extent of this overstatement. As put by one economist, 'The ultimate physical

product of economic life is garbage.'[9] A rising GDP means more garbage—more environmental pollution. In fact, under existing accounting procedures, when a manufacturer pollutes a river and government spends to clean it up, the cleanup expense is added to the GDP while the pollution is not subtracted!

Global SNAPSHOT NATIONAL OUTPUT ACROSS THE GLOBE



Gross national product (GNP), which adjusts GDP for net income paid overseas, is another commonly used measure of the value of the output produced by an economy. A quick look at GNP allows us to compare the size of economies, in terms of the value of their output measured in some common currency. The usual choice, as is done here, is to use the US dollar.

Country or region	GNP, US$ billion 1997
Australia	382.7
Brazil	784.0
Canada	595.0
China, mainland	1 055.4
China, Hong Kong SAR	163.8
France	1541.6
Germany	2 321.0
Greece	122.4
India	357.4
Indonesia	221.5
Italy	1 160.4
Japan	4 812.1
Malaysia	98.2
Mexico	348.6
New Zealand	59.5
Philippines	88.4
Russian Federation	394.9
Singapore	101.8
South Korea	485.2
Spain	569.6
United Kingdom	1 231.3
United States	7 783.1
Europe EMU	*6 815.0*
World	**30 125.0**

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. What share of 1997 world output was accounted for by the United States, Japan and the European nations in the Economic and Monetary Union (EMU)?
2. What fundamentals lie behind the difference in the sizes of measured GNP that we observe across the nations in the table? Prepare a list of these factors.
3. What problems might exist in comparing the size of economies on the basis of the US dollar value of their output? Explain.

THE UNDERGROUND ECONOMY

Economists agree that there exists a relatively large and apparently expanding underground sector in our economy. Some participants in this sector are engaged in illegal activities such as gambling, prostitution and selling narcotics. These may well be 'growth industries'. For obvious reasons, persons receiving income from such illegal businesses choose to conceal their incomes.

Most of the participants in the underground economy are in legal activities, but do not fully report their incomes. A waiter or waitress may under-report tips from customers. A business person may record only a portion of sales receipts for the tax collector. A worker who wants to retain unemployment compensation or welfare benefits may obtain an 'off-the-books' or 'cash-only' job so there is no record of his or her work activities. As inflation and high tax rates have squeezed real incomes, the incentive has become greater to receive income in forms (for example, cash or barter) that cannot be easily discovered by the taxation department.

Although there is no consensus as to the size of the underground economy, it may account for 10 per cent or more of the GDP! If the underground economy is growing relative to the legal economy, then national income accounts will obviously understate our economy's performance and growth through time. Similarly, to the extent that a growing proportion of the population is involved in illegal activities, or in legal activities in which income is concealed, our official unemployment statistics will be overstated.

This obviously poses problems for policy makers. If growth of the underground economy distorts such basic economic indicators as GDP and the unemployment rate, policies based upon these indicators may be inappropriate and harmful. Thus an understated GDP and an overstated unemployment rate might prompt policy makers to stimulate the economy. But, as we shall find in Chapter 9, the stimulus may tend to cause unwanted inflation rather than increases in real output and employment.



Concept highlights

- GDP is intended purely as a measure of national economic performance and, as such, is not constructed to be used as an index of social welfare.
- GDP measures exclude a variety of non-market transactions that may increase or decrease social welfare. These exclusions involve:
  - changes in leisure and product quality, which may improve social welfare
  - the composition and distribution of output, which may have an impact on the total welfare generated by a given level of output
  - the environmental effects of production, particularly pollution, which may reduce social welfare.

  The benefits and costs associated with transactions undertaken in the underground economy are also excluded.

Asian FOCUS — ECONOMIC WELFARE IN THE ASIAN REGION

Incomes are distributed unevenly both within and between nations. Our measure of focus here is GNP per capita—the nationally produced value of output of goods and services per person. We have used US dollars as the reference currency.

Country or region	GNP per capita 1997, US$
Australia	20 650
China, mainland	860
China, Hong Kong SAR	25 200
India	370
Indonesia	1 100
Japan	38 160
Malaysia	4 530
New Zealand	15 830
Singapore	32 810
Thailand	2 740
Vietnam	310
Low- and middle-income countries in:	
East Asia and Pacific	970
Europe and Central Asia	2 320
South Asia	390
World	**5 130**

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1 What benefits may there be in using GNP or GDP per capita when evaluating an economy instead of simply using the value of GDP? Suggest and discuss at least three benefits.

2 What shortcomings may exist in using US dollar measures of GDP per capita to measure differences in relative economic welfare across nations? In particular, what factors does GDP (or GNP) ignore? Explain.

MEASURING THE ECONOMY'S EXTERNAL BALANCE—THE INTERNATIONAL BALANCE OF PAYMENTS

We can sense the importance of Australia's exchange of goods and services with the rest of the world through the impact of the value of Australia's net exports (*NX*) on the level of Australian GDP. The transactions and activities associated with the creation of net exports have a direct impact on both the production and expenditure sides to GDP. However, a focus on real activities means that we will ignore many of the other important forms of transaction that occur across national boundaries, particularly those associated with financial transactions, and their impact on the economy.

What we want to achieve with this discussion is an understanding of the wide variety of international transactions in which Australia engages, their changing structure and levels over time, and the implication of these changes for our external balance. This spectrum of international trade and financial transactions is reflected in Australia's international **balance of payments account**. A nation's balance of payments statement attempts to record all the transactions that take place between its residents (including individuals, businesses, and government units) and the residents of all foreign nations. These transactions include merchandise exports and imports, tourist expenditures, purchases and sales of shipping and insurance services, interest and dividends received or paid abroad, purchases and sales of financial or real assets abroad, and so on.

Balance of payments account: a statement recording all the transactions that take place between a country's residents (including individuals, businesses, and government units) and the residents of all foreign nations.

Stated differently, Australia's balance of payments account shows the balance between all payments it receives from foreign countries and all the payments that it makes to them. The basic feature that distinguishes international from domestic payments is that two different national currencies are involved. Thus, for instance, when Australian firms export goods to British firms, the Australian exporter will want to be paid in dollars. But the British importers have pounds sterling. This requires an exchange of pounds for dollars to permit the Australian export transaction to occur. The problem is resolved by the existence of *foreign exchange markets*, in which Australian dollars can be used to purchase British pounds, Japanese yen, German marks, Italian lire, etc.; and British pounds, Japanese yen, German marks, Italian lire, etc. can be used to purchase Australian dollars. These markets are sponsored by major banks in New York, London, Sydney, Zurich and elsewhere. In these markets it is possible to exchange one currency for another; the rate at which any two currencies are exchanged represents an **exchange rate**, as outlined in Chapter 3. Exchange rates and exchange rate systems are discussed in Chapters 18 and 19.

Exchange rate: the price of a unit of one currency expressed in units of another currency.

A simplified balance of payments account for Australia in 1998–99 is shown in Table 4.7. The account comprises two main subcategories of accounts:

1. the current account—reflecting current transactions
2. the capital and financial account, which comprises the capital account—reflecting transactions of a non-current and non-financial nature; and the financial account—reflecting transactions involving the exchange of financial assets.

CURRENT TRANSACTIONS

Current account balance: the sum of the goods and services balance, income balance and current transfers balance.

The first portion of Table 4.7 summarises Australia's trade in currently produced goods and services and is termed the **current account balance**.

The current account balance is of interest to us for a number of reasons:

- Current transactions form an important component of our national accounts through the demand for output they imply.
- The level of the current account balance indicates the degree to which we are living within our means—whether we are borrowing to consume now.

GOODS BALANCE

Free on board (fob): valuation of exports and imports is that for the actual goods and excludes service costs.

Items 3 and 4, goods credits and goods debits, show the levels of Australian exports (fob) and imports (fob) of goods, respectively, over the 1998–99 year. The term 'fob' or **free on board** implies that the valuation of exports and imports is that for the actual goods and excludes insurance and freight costs, which are classified as services and recorded for the balance of payments as such.

Table 4.7 Australia's balance of payments account, 1998–99 ($ million)

Current account balance (A)	**−33 022**
Goods and services balance (B)	*−14 589*
Goods and services credits (1)	111 891
Goods and services debits (2)	−126 480
Goods balance (C)	−12 699
Goods credits (3)	85 732
Goods debits (4)	−98 431
Services balance (D)	−1 890
Services credits (5)	26 159
Services debits (6)	−28 049
Income balance (E)	*−18 318*
Income credits (7)	9 894
Income debits (8)	−28 212
Current transfers balance (F)	*−115*
Current transfers credits (9)	4 093
Current transfers debits (10)	−4 208
Capital and financial account balance (G)	**32 516**
Capital account balance (H)	1 174
Capital transfers balance (I)	1 193
Capital transfers credits (11)	2 197
Capital transfers debits (12)	−1 004
Net acquisition/disposal of non-produced, non-financial assets (J)	−19
Financial account balance (K)	*31 342*
Direct investment net (L)	12 763
Direct investment abroad (13)	−935
Direct investment in Australia (14)	13 698
Portfolio investment net (M)	9 899
Other investment net (N)	9 248
Reserve assets (O)	−568
Net errors and omissions (P)	506

SOURCE: Australian Bureau of Statistics, Balance of Payments, *ABS Cat. No. 5302.0.*

Note that we have designated Australian goods exports as having a positive value (the goods credits) and Australian goods imports having a negative value, being recorded with a minus sign (the goods debits). The reason for this is that Australian goods exports (and other export-type transactions) are credits in that they create or earn supplies of foreign exchange. Any export-type transaction that obligates foreigners to make 'in-payments' to Australia generates supplies of foreign monies in Australian banks. Conversely, Australian imports (and other import-type transactions) are debits in that they use up foreign exchange. Australian imports obligate Australians to make 'out-payments' to the rest of the world that draw down available supplies of foreign currencies held by Australian banks.

Balance of trade: the difference between a country's merchandise (goods) exports and its merchandise imports.

The goods balance (item C in Table 4.7), sometimes referred to simply as the **balance of trade**, refers to the difference between a country's exports of goods and its goods imports. If exports exceed imports, a trade surplus, or 'favourable balance of trade', is being realised. If imports exceed exports, a trade deficit or 'unfavourable balance of trade' is occurring.

SERVICES BALANCE

Australia not only exports goods (for example, beef and iron ore) but also sells various services to residents of foreign countries (for example, transport services, insurance, and tourist and brokerage services). Item 5 refers to the income from these services. Australia is also paid royalties and licence fees for the products and techniques that it has developed, but which are used to provide goods and services produced by foreign companies. Item 6 merely indicates that Australians buy or 'import' similar services from foreigners. Note that the services balance (item D), represents the difference between these two accounts.

GOODS AND SERVICES BALANCE

Goods and services balance: the net difference between value of exports and imports of current goods and services.

The **goods and services balance** (item B) refers to the difference between our exports of goods and services (item 1) and our imports of goods and services (item 2). The goods and services balance is equivalent to the addition of the goods balance and the services balance—that is, item C plus item D.

INCOME BALANCE

Income balance: net interest, dividend payments and reinvested earnings, plus net payments made to employed workers located outside their official country.

The **income balance** (item E) largely reflects the fact that historically Australia has been a net international borrower. Over time, foreigners have invested more in Australia than Australians have invested abroad. However, there are some income transfers that result from the compensation to foreign-resident employees.

Thus item 8 (income debits) represents the interest and dividend payments that Australians have paid for the services of imported capital, the reinvested earnings, and the payments made to Australian-employed workers located overseas. Item 7 (income credits) represents interest, dividend payments and the reinvestment of earnings from foreigners to Australians for the services of Australian-owned investments overseas, plus the sums transferred to remunerate foreign-employed workers located in Australia.

CURRENT TRANSFERS BALANCE

Current transfers balance: net transfers, both public and private, from the rest of the world to Australia, including net pensions paid to/from Australia and net remittances to/from relatives abroad.

Current transfer credits (item 9) represent transfers, both public and private, from the rest of the world to Australians. Included here are pensions paid to Australians from overseas sources and remittances of relatives abroad to Australian immigrants—remittances for which no current exchange of goods or services occurs. Current transfer debits (item 10) represent similar payments from Australians to overseas destinations. The **current transfers balance** (item F) represents the difference between these two accounts.

CURRENT ACCOUNT BALANCE

By taking all the current transactions into consideration, we obtain the **current account balance** shown by item A in Table 4.7. It is calculated by adding together the goods and services balance (item B), the income balance (item E) and the current transfers balance (item F). In 1998–99 Australia realised a current

account deficit of $33 022 million. This simply means that our current account export transactions (items 3, 5, 7 and 9) supplied a smaller quantity of foreign currencies than our import transactions (items 4, 6, 8 and 10) required.

CAPITAL AND FINANCIAL TRANSACTIONS

We have found from the first part of the balance of payments account that in 1998–99 current transactions involved a deficit of $33 022 million. This reflects the net movement of goods and services. The second part of the account summary—the capital and financial account balance (item G in Table 4.7)—mainly shows Australia's net financial movements in the form of borrowings and investments. Capital and financial transactions are divided into two components—capital transfers and financial transfers—reflected in the capital account (item H) and the financial account (item K), respectively. It is important that we now examine the nature and composition of these accounts.

CAPITAL ACCOUNT

Capital account balance: the sum of net capital transfers (migrants' transfers and aid flow related to capital formation) and net sales of patents, copyrights, trademarks, franchises and embassy land (non-produced, non-financial assets).

The capital account comprises primarily capital transfers and entries for the acquisition (less disposal) of non-produced, non-financial assets. The **capital account balance** (item H of Table 4.7) thus represents the net inflow/outflow of funds for these purposes. Capital transfers (items 11 and 12) include migrants' transfers and certain aid flows that can be related to fixed capital formation. Entries related to the acquisition (less disposal) of non-produced, non-financial assets (item J) include the sale of patents, copyrights, trademarks, franchises and certain infrequent transactions in embassy land.

FINANCIAL ACCOUNT

The financial account shows the value of Australia's transactions in domestic and foreign financial assets and liabilities. Thus the financial account balance essentially relates to investment and borrowing transactions. These transactions are arranged under the headings of direct investment; portfolio investment; other investment; and reserve assets.

Direct versus portfolio investment

Direct investment (item L) occurs when investment is made by non-residents in an Australian company that is controlled by overseas interests, or when Australians make investments in a foreign company that is controlled by Australian interests. **Portfolio investment** (item M), on the other hand, occurs when non-residents buy shares or bonds from, or make loans to, 'Australian-controlled' enterprises, and Australians buy shares or bonds from, or make loans to, 'foreign-controlled' enterprises.

The distinction between direct and portfolio investment is simple in principle, the key being the term 'controlled'. The problem is that the definition of 'controlled' is somewhat arbitrary, being defined as ownership of 10 per cent of ordinary shares or voting stock in the company.

Financial account balance: the net flows of funds associated with direct investment in shares and portfolio investment via shares and institutional loans, other investment and changes in the value of reserve assets.

Portfolio investment also includes **institutional loans**—loans raised from financial institutions and other companies which have no direct investment in, and are unrelated to, the borrowing company in the country where the loan is being made.

Other investment and reserve assets

Other investment (item N) is a residual category for all financial transactions not covered in direct investment, portfolio investment or reserve assets. The reserve assets transactions (item O) involve changes in the value of the Reserve Bank's assets, which include foreign exchange and gold (see Chapter 12).

The total **financial account balance** (item K of Table 4.7) is equal to the sum of items L, M, N and O.

NET ERRORS AND OMISSIONS

Much like the statistical error in the national accounts associated with the different measures of GDP, the balance of payments has a *net errors and omissions* category to ensure that the accounts balance. The reasons for these errors are many, but reflect both errors and lags in the reporting of transactions associated with the key components of the balance of payments.



Concept highlights

- The balance of payments records all of the international trade and financial transactions that take place between a given nation such as Australia and the rest of the world. The balance of payments is divided into two sections: the current account, which looks at all of Australia's current transactions; and the capital and financial account, which deals with Australia's net acquisition of foreign assets.
- The current account balance considers not only the goods and services balance, but also the income balance and the current transfers balance.
- The goods balance compares merchandise exports and imports and is often referred to as the balance of trade. The goods and services balance compares exports and imports of both goods and services. The income balance deals mainly with payments of incomes—interest, rent and dividends—related to borrowings and investment. The current transfers balance reflects net pension payments made to and from Australia, and net remittances to and from relatives abroad.
- The capital account balance comprises primarily capital transfers. These include certain aid flows and transfers of migrants' wealth, and entries for the acquisition (less disposal) of non-produced, non-financial assets such as patents and copyrights.
- The financial account balance covers the direct investment, portfolio investment, other investment and reserve assets categories.
- Direct investment represents significant cross-border stock investment associated with ownership of more than 10 per cent of a foreign company's shares. Portfolio investment comprises investment in shares where a controlling interest is not held (< 10 per cent) and institutional loans. The remainder of the financial account comprises other investments and reserve assets, the latter showing changes in the value of assets held in the Reserve Bank of Australia's balance sheet.

INTERRELATIONSHIPS IN THE BALANCE OF PAYMENTS AND THE CONCEPT OF EXTERNAL BALANCE

Concept application

The current account balance and the capital and financial account balance are not unrelated; rather, they are essentially reflections of one another. Under the floating exchange rate system that currently operates, the balances on current and capital and financial accounts will match—subject to a small statistical error. Thus in this sense there will always be a 'balance' in the balance of payments. Equality between the demand for and the supply of foreign exchange will see to this (consider the demand and supply analysis as applied to exchange rates in Chapter 3).

External balance: a level of the current account consistent with the maintenance of existing (or growing) levels of consumption, employment and national output over the long term.

But what then becomes of our need to define **external balance**? We require a meaningful definition of external balance to provide both economic analysis and economic policy prescription with respect to the state of our external transactions. Under our current exchange rate system (see Chapter 19), the net position in the balance of payments is zero. In this sense, balance in our international or external transactions is always achieved. This outcome is not, then, a satisfactory definition of external balance. Indeed, as we will discuss further in Chapter 5, the simple condition that the balance of payments balances is not sufficient for the economy to be in an equilibrium position. External balance must be defined in a different fashion; it must be defined in terms of the underlying structure of the balance of payments, rather than the balance itself, which is always equal to zero.

Our current account balance reflects both our current consumption pattern—through the goods and services balance—and our payments to foreigners for the investment funds and borrowings that have partly financed the acquisition of our capital stock and have also made it possible to maintain our consumption levels. This is reflected in the deficit in the current account balance of $33 022 million in 1998–99, of which just over 55 per cent, or $18 318 million, was a deficit on the income balance.

The key question is whether the level of our current transactions—the current account balance—can be sustained in the long term so as to maintain our existing (or higher) levels of consumption, employment and national output. Thus we need to know if our use of financial capital, indicated by the various flows relating to capital and financial transactions—the components of the capital and financial accounts—is directed towards the creation of additions to our net capital stock. This is because it is only net investment that increases our productive capacity, as explained in our discussion of investment in the national accounts.

Why is this the case? Capital transactions reflect the exchange of financial and real assets. These are purchased with the expectation of receipt of future income flows from these assets—flows that will be recorded as in the income balance component of the current account balance. Thus if we run a deficit on the current account—a surplus on the capital account—we are increasing our future payments of income—rent, interest and profit flows—to foreign holders of Australian-domiciled assets. If our use of these foreign-owned funds is not productive, from where will these future income payments be derived? Through a reduction in our future consumption!

We thus have a more workable definition of external balance available to us. Clearly, this must relate to the ability of the economy to produce output—both for current consumption activities and to repay previous borrowings from overseas. This suggests that incomes—and our capacity to pay—must grow at a rate that is as least as great as that of our borrowings from the rest of the world.

Put simply, external balance implies a level of the current account balance consistent with the maintenance of existing (or growing) levels of consumption, employment and national output over the long term. Thus, we would not wish to see sharp and sustained increases in ratios such as net foreign debt to GDP, the current account balance to GDP or the income balance to GDP. Each would suggest the need to sacrifice increased future consumption or to reduce consumption. As we shall see in Chapter 5, Australia has not always been successful in this area.



Concept highlights

- External balance requires a level of the current account that is consistent over the long term with increasing national output and consumption. It is thus defined in terms of the structure of the balance of payments, rather than relying on the definitional fact that the balance of payments always balances, and equals zero.
- To be consistent with growing consumption, income and employment over time, increases in our capacity to produce income through net investment must be sufficient to pay for the funds borrowed for investment and current consumption. Thus we must be able to service the income flows (income balance) required by any increases in the level of our net foreign debt that are implied by inflows recorded in the financial and capital accounts.

SUMMARY

1 Gross domestic product (GDP), provides a basic market measure of society's economic performance. It represents the market value of all final goods and services produced in a year. Intermediate consumption is excluded from GDP to prevent double-counting of output. Non-productive transactions (purely financial transactions and second-hand sales) are also purposely excluded in calculating GDP.

2 GDP may be calculated by summing total expenditures on all final output or by summing the income derived from the production of that output.

3 By the expenditures approach, GDP is determined by adding consumer purchases of goods and services, gross investment spending by businesses, government purchases of goods and services, and net exports, that is:

$$\text{GDP} = C + I + G + NX$$

4 Gross investment can be divided into (a) replacement investment (required to maintain the stock of capital at its existing level); and (b) net investment (the net increase in the stock of capital). Positive net investment is associated with a growing economy, negative net investment with a declining economy, and zero net investment with a static economy.

5 By the income approach, GDP is calculated as the sum of compensation to employees (wages, salaries and supplements), gross operating surpluses, mixed income, and taxes less subsidies on production and imports.

6 Nominal (or current price) GDP measures each year's output, valued in terms of the prices prevailing in that year. Real (constant dollar) GDP measures each

year's output in terms of the prices that prevailed in a specified base year. By adjusting for price-level changes, real GDP provides a superior measure of the level of productive activity. To achieve this adjustment between nominal and real GDP, we may use implicit price deflators (IPDs). In Australia, movements in real output and the IPDs are calculated using chain-price indices.

7 GDP is a measure of market activity, and as such is not intended as a perfect measure of social welfare. Nevertheless, GDP measures are useful indicators of the nation's economic performance. The various measures of national output exclude non-market and illegal transactions, changes in leisure and product quality, the composition and distribution of output, and the environmental effects of production. These non-market transactions clearly may have considerable impact on our welfare, meaning that GDP may provide an overstatement or understatement of a monetary measure of society's wellbeing.

8 Australian exports of goods, services and financial assets create a foreign demand for dollars and make a supply of foreign exchange available to Australians. Conversely, Australian imports of goods, services and financial assets simultaneously create a demand for foreign exchange and make a supply of dollars available to foreigners. The balance of payments records all of the international trade and financial transactions that take place between a given nation and the rest of the world. The balance of payments comprises two sections: (a) the current account, which looks at all of Australia's current transactions; and (b) the capital and financial account, which deals with Australia's net acquisition of foreign assets.

9 The current account balance considers not only the goods and services balance, but also the income balance and the current transfers balance. The goods balance compares merchandise exports and imports and is often referred to as the balance of trade. The goods and services balance compares exports and imports of both goods and services. The income balance deals mainly with payments of incomes—interest, rent and dividends—related to borrowings and investment. The current transfers balance reflects net pension payments made to and from Australia, and net remittances to and from relatives abroad.

10 The capital account balance comprises primarily capital transfers. These include certain aid flows for capital works and transfers of migrants' wealth, and entries for the acquisition (less disposal) of non-produced, non-financial assets—mainly patents, copyrights, the use of trademarks and infrequent sales and purchases of embassy land.

11 The financial account balance covers the direct investment, portfolio investment, other investment and reserve assets categories. Direct investment represents significant cross-border stock investment. This is associated with ownership of more than 10 ten per cent of a foreign company's shares, allowing the owner to exercise a 'controlling' interest in the operation of the company. Portfolio investment comprises investment in shares where a controlling interest is not held (less than 10 per cent of the shares are owned) and institutional loans. Institutional loans are loans raised from financial institutions and other companies which have no direct investment in, and are unrelated to, the borrowing company in the country where the loan is being made. The remainder of the financial account comprises other investments and reserve assets, the latter showing changes in the value of assets held in the Reserve Bank of Australia's balance sheet.

12 With freely floating exchange rates, a deficit (surplus) on the current account balance will be largely offset by a surplus (deficit) on the capital and financial account balances. Thus the balance of payments always balances and takes a zero value. A balance of payments equilibrium therefore does not provide a useful reference for a definition of external balance.

13 External balance requires a level of the current account that is consistent over the long term with increasing national output and consumption. It therefore needs to be defined in terms of the structure of the balance of payments. To be consistent with growing consumption, income and employment over time, increases in our capacity to produce income through net investment must be sufficient to pay for the funds borrowed for investment and current consumption. Thus we must be able to service the income flows (income balance) required by any increases in the level of our net foreign debt that are implied by inflows recorded in the financial and capital accounts. Thus we may define external balance in terms of a sustainable level of the current account balance, or a sustainable ratio of the current account balance to GDP.

KEY TERMS *and* CONCEPTS *to remember*



balance of payments account 128
balance of trade 129
base year 121
capital account balance 131
consumer price index (CPI) 122
current account balance 128, 130
current transfers balance 130
declining economy 115
depreciation 117
direct investment 131
double-counting 108
exchange rate 128
expanding economy 114
expenditures and income approaches 111
external balance 133
final versus intermediate goods and services 108
financial account balance 132
'free on board' (fob) 128
goods and services balance 130
government purchases of goods and services 115
gross domestic product (GDP) 107
gross versus net private investment 112–114
household disposable income (DI) 145
implicit price deflator (IPD) 122
income balance 130
indirect taxes 118
inflating and deflating 122
institutional loans 132
intermediate consumption 108
national income (NI) 144
net exports 115
nominal versus real GDP 120
non-productive transactions 109
personal consumption expenditures 112
portfolio investment 131
stationary or static economy 114
subsidies 118
value added 108

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 'National income statistics are a powerful tool of economic understanding and analysis.' Explain. 'An economy's output is its income.' Do you agree? Explain.

2 Why do national income accountants include only final goods in measuring total output?

3 Why are changes in stocks (or inventories) included as part of investment spending? Suppose inventories decline by $1 billion during 1998–99. How would this affect the size of gross private investment and gross domestic product in 1998–99? Explain.

4 Use the concepts of gross and net investment to distinguish between an expanding, a static and a declining economy. 'In 1933 net private investment was minus $5.5 million. This means in that particular year the economy produced no capital goods at all.' Do you agree? Explain: 'Though net investment can be positive, negative or zero, it is quite impossible for gross fixed investment to be less than zero.'

5 Define net exports. Suppose foreigners spend $67 000 million on Australian exports in a given year and Australians spend $65 000 million on imports in the same year. What is the amount of Australia's net exports?

6 Why do national income accountants compare the market value of the total outputs in various years rather than actual physical volumes of production? What problem is posed by any comparison over time of the market values of various total outputs? How is this problem resolved?

7 What does the international balance of payments represent? What are its basic sections and the main 'balances' it contain?

Problems & exercises

1 The following is a list of national income figures (in millions) for a given year. Use these data to determine GDP by both the expenditures and the income methods. The answers derived by each approach should be the same.

Net transfers overseas 26
Private final consumption expenditure 510
Exports of goods and services 130
Indirect taxes 101
Compensation of employees . . 461
Companies—depreciation allowance 24
Financial enterprises—depreciation allowance 4
Dwellings owned by persons—gross operating surplus 51
Gross private fixed capital expenditure 120
Government final consumption expenditure 132
Public enterprises—depreciation allowance 9
Unincorporated enterprises—gross operating surplus 94
Subsidies 4
Financial enterprises—gross operating surplus 21
Government fixed capital expenditure 71
Dwellings owned by persons—depreciation allowance 5
Imports of goods and services 134
Companies—gross operating surplus 97
Unincorporated enterprises—depreciation allowance 10
Public enterprises—gross operating surplus 19
Increase in stocks 11
Net income paid overseas 63

2 The table below shows GDP at current prices (money GDP) and an appropriate price index (the implicit price deflator) for a group of selected years. Compute GDP at constant 1989–90 prices (real GDP). Indicate in each calculation whether you are inflating or deflating the money GDP data.

Year	GDP at current prices ($ million)	Implicit price deflator (1989–90 = 100)	GDP at constant 1989–90 prices ($ million)
1970–71	35 116	17.80	
1973–74	53 187	23.76	
1979–80	122 933	46.86	
1980–81	140 280	51.74	
1984–85	216 257	71.61	
1986–87	264 488	82.88	
1988–89	339 582	95.61	
1989–90	369 897	100.00	
1991–92	386 499	107.04	

3 Which of the following are actually included in deriving this year's GDP? Explain your answer in each case.

(a) dividends on a BHP share

(b) social security payments received by a retired factory worker

(c) the services of a painter in painting the family home

(d) the income of a dentist

(e) the money received by Smith when he sells a 1984 Holden to Jones

(f) the monthly allowance that a college student receives from home

(g) rent received on a two-bedroom flat

(h) the money received by Wilson when he resells this year's model Ford to Wilcox

(i) interest received on government bonds

(j) a two-hour reduction in the length of the work week

(k) the purchase of a bank bond

(l) a $20 million increase in business stocks

(m) the purchase of 100 BHP shares

(n) the purchase of an insurance policy

(o) wages paid to a domestic servant

(p) the market value of a homemaker's services

(q) the purchase of a Renaissance painting by a public art museum

4 The table below contains hypothetical international balance of payments data for Australia. All figures are in billions. Compute the missing elements, with the appropriate sign (+ or –), and enter their values in the table.

International balance of payments (hypothetical data)

Current account	
(1) goods exports	+150
(2) goods imports	−200
(3) *Goods balance*	
(4) services exports	+75
(5) services imports	−60
(6) *Goods and services balance*	
(7) Income balance	+12
(8) Current transfers net	−7
(9) **Current account balance**	
Capital and financial account	
(10) *Capital account balance*	*−10*
(11) *Financial account balance*	*+90*
(12) Direct investment	+65
(13) Total non-official	
(14) Other investment	0
(15) Reserve assets	−5
(16) **Capital and financial account balance**	
(17) Net errors and omissions	



1 Explain: 'Ms Smith diminishes the national income by marrying her cook.' In what way is this true by definition of GDP? Is this one of the problems with the use of GDP as a measure of social welfare?

2 How does Australia finance its current account deficit? What long-term problems will arise for Australia if it uses its capital account surplus to fund current consumption instead of increasing its productive capacity? Explain carefully. What evidence exists that this is a problem?

3 What are the latest figures on GDP and the current account balance? To find out visit the ABS website at:
http://www.abs.gov.au/

You will find that the ABS has a statistical summary of the latest information. Find out how much GDP grew in the most recent period. Did much of this growth come from consumption or investment? Look at retail sales figures to get an idea.

4 Is Australia's external balance improving or worsening? How can you tell? Explore the ABS website for this information.

NOTES

1 We shall see that all goods produced in a particular year may not be sold; some may be added to inventories. Any increase in inventories must be included in determining GDP, since GDP measures all current production regardless of whether or not it is sold. Thus, when accounting for the value of additions to inventories, we treat them as if the firm had bought them itself.

2 The term 'profits' is used here in the accounting sense so as to include both normal profits and economic profits.

3 We could, of course, have subtracted imported consumption goods from total C, and similarly for I and G. It is more convenient, however, to estimate the totals of expenditure on C, I and G, including imports, and then subtract total imports of all kinds in one lump from the total of $C + I + G + X$.

4 In reality, the use of supply and demand analysis can show us that the shifting of a sales tax is not quite as simple as this.

5 This yields the same result as the more complex procedure of dividing money GDPs by the corresponding index number and multiplying the quotient by 100.

6 The accounting, or financial, year does not coincide with the calendar year. For example, 2000–01 covers the period from July 2000 to the end of June 2001. It is the same for other years. Unless otherwise stated, if we refer to an accounting figure or price level 'for 2000', this should be read as 2000–01.

7 Technical note: While this discussion of Table 4.6 provides an intuitive understanding of the process of inflating or deflating GDP with appropriate index numbers, a thorough grasp of the rationale for dividing money GDP by the implicit price deflator to get real GDP calls for further comment. Suppose we want to adjust money GDP for 1996 to real GDP (in 1998 prices) so we can determine the growth of real GDP between 1996 and 1998. We know, first, that money GDP for 1996 (GDP_{1996}) is equal to the physical output in 1996 (Q_{1996}) times the prices (P_{1996}) at which the output sold, that is:

$$GDP_{1996} = Q_{1996} \times P_{1996}$$

We also know from the text's discussion of index numbers that the price index for 1996, using 1998 as the base year, equals the ratio of prices in 1996 to prices in 1998. Thus:

$$\text{1996 price index} = P_{1996}/P_{1998}$$

The text also directs us to divide money GDP for 1996 by this 1996 price index to get real GDP for 1996, that is, 1996's output measured at 1998 prices:

$$\frac{GDP_{1996}}{P_{1996}/P_{1998}} = \frac{Q_{1996} \times P_{1996}}{P_{1996}/P_{1998}}$$

Inverting and multiplying by the fraction or ratio that represents the 1996 index, we get:

$$\frac{GDP_{1996}}{P_{1996}/P_{1998}} = \frac{Q_{1996} \times P_{1996}}{P_{1996}} \times P_{1998}$$

The P_{1996} expressions cancel, leaving:

$$\frac{GDP_{1996}}{P_{1996}/P_{1998}} = (Q_{1996} \times P_{1998})$$

That is to say, by dividing the 1996 money GDP (GDP_{1996}) by the 1996 price index (P_{1996}/P_{1998}), we derive real GDP for 1996 or, more specifically, the 1996 output (Q_{1996}) measured in terms of 1998 prices (P_{1998}).

8 Arthur M. Okun, 'Social Welfare Has No Price Tag', *The Economic Accounts of the United States: Retrospect and Prospect*, United States Department of Commerce, July 1971, p. 129.

9 See the delightful and perceptive essay 'Fun and Games with the Gross National Product' by Kenneth E. Boulding, in Harold W. Helfrich, Jr (ed.), *The Environmental Crisis*, Yale University Press, New Haven, 1979, p. 162.



A LAST WORD IS GDP A REAL MEASURE OF PROGRESS?

GDP is an important measure in the Australian national accounts. However, the usefulness of the GDP as a measure of national progress is a matter of some debate, as this ABC radio interview demonstrates.

How well do our economic indicators reflect our quality of life? Each month, our politicians and economists wait with great anticipation for the latest CPI figures, numbers of jobless and the latest growth figures as measured by the GDP or gross domestic product.

However, there are some commentators and economists who are now questioning the value of such indicators, and last week the CSIRO released a survey of some 1200 Australians, the majority of whom said increasing economic growth is not the recipe for a good quality of life.

Well, visiting Australia is Ted Halstead, the founder of a movement called Redefining Progress, an American organisation which has its own idea of evaluating prosperity. It's called the genuine progress indicator.

Ted Halstead explained more to *The World Today*'s Peter Jeppesen.

REPORTER: Ted Halstead, first of all, how distorting is the whole idea of the gross domestic product, the GDP?

TED HALSTEAD: Really distorting, because not only does it miss quality of life considerations entirely, but it actually treats social and environmental breakdown as economic gain, so no matter whether we're having more car accidents, more oil spills or an increase in the national debt, the GDP actually treats all of that as economic gain.

REPORTER: So you've developed the genuine progress indicator—is that right?

HALSTEAD: That's correct.

REPORTER: What's that?

HALSTEAD: What it is is an alternative to the GDP that takes into account 24 aspects of our economic lives that the GDP ignores.

For example, it includes the value of housework and the value of volunteer work, it takes into account the distribution of income, and it subtracts certain costs, for example, car accidents, for example, the cost of pollution, and so what it does is it comes up with a cost–benefit analysis of a national economy that gives us a much better sense of how a national condition is changing over time.

And what it shows is rather dramatic. For the United States, it shows that as of 1973 overall economic wellbeing has been declining, and a similar measure for Australia developed by the Australian Institute shows that again, as of the end of the 1970s, conditions have hardly changed, meaning that wellbeing has not increased at all since the 1970s here in Australia.

REPORTER: But in both the United States and in Australia there's clear indications that there is, in fact, economic development; there's more growth. You're suggesting that there's less progress.

HALSTEAD: Exactly.

REPORTER: How can we be developing more but progressing less? That's surely a contradiction.

HALSTEAD: No, it's not, in fact, because much of what we now consider economic growth as measured by the GDP is really one of three things: it's either the fixing of blunders from the past, for example, the cleaning up of an oil spill; the borrowing of resources from the future, for example, the depletion of Australia's topsoil or ancient forest; or the shifting of functions from the home economy to the service economy.

We're buying and selling more, but our quality of life is going down, and I think that the most interesting way to capture this paradox is between what the Treasury Minister Costello said last week, that all the economic indicators are good and going up, compared to a poll that came out last week showing that over 50 per cent of Australia believes the quality of life is actually in decline.

REPORTER: Nevertheless, if you're measuring progress, what's progress to you might not be progress to somebody else. I mean, what values do you impute in your so-called progress indicator?

HALSTEAD: Values that would reflect the shared perception of the majority of the population. We actually began this exercise using polls about shared values so, for example, I don't think there's much question that the cost of crime, or crime in general, would be considered a negative by most people, likewise that car accidents would be considered a negative. I think there's also broad social agreement that the more equal the distribution of income, the better off the society.

REPORTER: So what are the likely policy outcomes of what you do? I mean, how is what you're doing going to change the way governments use policy in America?

HALSTEAD: Well, on the broadest level, there's been a lot of talk about performance-based budgeting, both in Australia and in the United States. Now, in terms of how that will impact the actual design of individual policies, I would say that on the broadest level, what we're talking about is including social and environmental costs directly into market prices. One of the ways of doing that is through a whole new tax system which, very simply put, would reduce existing taxes on income and payroll and substitute for them taxes on pollution, energy use and so forth, and the result would be a lot more jobs, a lot less pollution and a far more coherent rationale for taxation, because what we would be saying is let's tax our waste, not our work.

SOURCE: Ted Halstead, founder of the Redefining Progress movement in America, speaking with Peter Jeppesen, ABC Radio, The World Today, *10 July 1997.*

Questions

1 According to Halstead, what items that are counted in estimates of GDP should be removed because of the overstatement in economic welfare that their inclusion in GDP estimates implies? Do you agree that the inclusion of items referred to by Halstead does spuriously inflate our estimates of GDP and our standard of living? Explain.

2 What items currently excluded from our GDP measure does Halstead suggest should be included in measures of our economic welfare? Do you agree that these items improve the general standard of living in our society? Explain. Why are these items currently excluded from our estimates of GDP if they are so valuable?

3 Halstead suggests that estimates of economic welfare be adjusted to account for the distribution of incomes in the society. What would a more unequal distribution of incomes imply for the measures of welfare that Halstead is proposing? What value judgements might his position imply?

APPENDIX *to* CHAPTER 4



OTHER NATIONAL ACCOUNTING CONCEPTS

Our discussion in Chapter 4 centred on GDP as a measure of the economy's annual output. However, there are certain related public accounting concepts of importance that can be derived from GDP. We will now trace through the process of deriving these concepts. This procedure will enhance your understanding of public accounting and of the way in which the expenditures and income approaches to GDP fit one another.

LEARNING OBJECTIVES

- **Derive the major public accounting concepts that are related to GDP.**
- **Describe the relationship between these accounting items and the components of GDP(*E*) and GDP(*I*).**

To achieve this, we will start with national turnover of goods and services and make a series of adjustments necessary for the derivation of the related public accounts. Figure A4.1 will provide a useful reference.

NATIONAL TURNOVER OF GOODS AND SERVICES

We have defined gross domestic product as the total market value of final goods and services. However, for the economy as a whole we may describe the total annual flow of goods and services as the sum of GDP plus imports (M) of final goods and services. This total flow, referred to as national turnover of goods and services (see column 1, Figure A4.1), is thus the total market supply of final goods and services. This total flow of supplies must necessarily equal total expenditures on goods and services—purchases that may be made by domestic residents or foreigners, that is:

national turnover = (GDP + M)

GROSS NATIONAL EXPENDITURE (GNE)

Gross national expenditure (GNE) equals the sum of domestic consumption, investment and government expenditures on goods and services ($C + I + G$). Thus GNE represents total domestic demand for goods and services. We are now able to confirm our earlier identity for GDP.

Since: national turnover = (GDP + M)
= (GNE + X)

then: GDP = national turnover − M
= GNE + X − M
= $C + I + G + (X - M)$
= $C + I + G + NX$

where NX is net exports (refer back to Tables 4.3 and 4.4 to check these concepts.)

<table>
<tr><td rowspan="8">National turnover of goods and services</td><td>Imports of goods and services</td><td>Imports of goods and services</td><td>Imports of goods and services</td><td>Imports of goods and services</td><td>Imports of goods and services</td><td>Imports of goods and services</td><td>Exports of goods and services</td></tr>
<tr><td rowspan="7">Gross domestic product</td><td rowspan="7">Gross domestic product at factor cost</td><td rowspan="6">Domestic factor income</td><td>Net income paid overseas</td><td>Net income paid overseas</td><td>Net income paid overseas</td><td></td></tr>
<tr><td rowspan="6">National income</td><td>Net transfers to overseas</td><td>Net transfers to overseas</td><td></td></tr>
<tr><td rowspan="5">National disposable income</td><td>Net lending to overseas</td><td></td></tr>
<tr><td rowspan="5">Gross national expenditure</td><td rowspan="5">Gross national expenditure</td></tr>
<tr><td>Indirect taxes less subsidies</td></tr>
<tr><td></td><td>Indirect taxes less subsidies</td><td>Consumption of fixed capital</td><td>Consumption of fixed capital</td><td>Consumption of fixed capital</td></tr>
</table>

SOURCE: Australian Bureau of Statistics, Australian National Accounts, *ABS Cat. No. 5206.0.*

FIGURE A4.1
National turnover of goods and services and related Australian national accounting concepts

This block diagram, taken from the *Australian National Accounts,* summarises the relationship between the major national aggregates. By working through from one column to another, readers may reinforce their understanding of the relationship between the aggregates.

NATIONAL INCOME (NI)

National income is defined in Australia as the total value of final production (GDP) less both consumption of fixed capital—depreciation allowances—and net income paid overseas.

DOMESTIC FACTOR INCOME (DFI)

Domestic factor income is that part of a given period's value added that accrues as income to suppliers of factors of production (labour, land, capital and enterprise) after allowing for the consumption of fixed capital. It is equivalent to the total of wages, salaries and supplements plus gross operating surpluses less depreciation allowances (GDP at factor cost less consumption of fixed capital).

HOUSEHOLD INCOME (HI)

Household income is the total income received by persons normally resident in Australia, and includes income received for productive activity (wages, salaries, etc. and income of unincorporated enterprises), some imputed items, dividends, and transfer incomes from government and overseas.

Note that there are two major differences between household income and national income. The latter includes all five gross operating surpluses, but household income includes only the gross operating surpluses of unincorporated

enterprises and dwellings (both of which go to persons). Also, household income includes transfers to persons although national income obviously does not.

HOUSEHOLD DISPOSABLE INCOME (DI)

Household disposable income is household income less direct taxes, fees, fines etc. charged to persons by general government; consumer debt interest; and transfers overseas.

Some other income accounting concepts are displayed in Figure A4.1.

SUMMARY

1 A variety of important national income accounting concepts can be derived from GDP. These include gross national expenditure—a summary of our level of spending—and various measures of household incomes.

2 These additional national income accounting concepts are summarised in Figure A4.1.

QUESTIONS *and* STUDY SUGGESTIONS

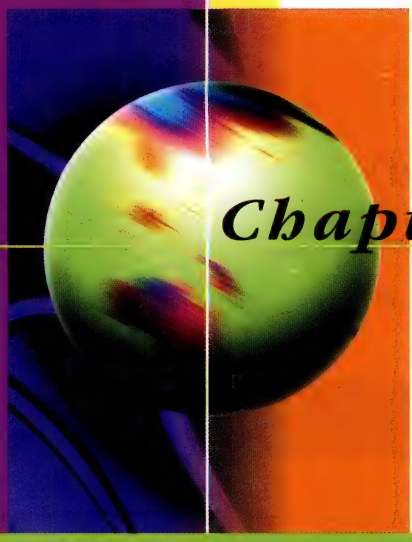
Discussion & review

Use the data from question 1 in the Problems and Exercises section of this chapter for the following:

1 Calculate: (a) the national turnover of goods and services; (b) gross national expenditure (GNE); and (c) national income (NI).

2 Determine domestic factor income (DFI): (a) by making the required subtractions from your calculation of GDP; and (b) by adding up the types of income that comprise DFI.

3 Adjust DFI to derive: (a) national income (NI); and (b) national disposable income (NDI) (refer to Figure A4.1).



Chapter 5 THE MACROECONOMIC ENVIRONMENT

INTRODUCTION

The emphasis in Part 1 of this book was on the essentially microeconomic problem of full production. To facilitate our discussion of how our economy allocates resources, we assumed **macroeconomic stability**—the existence of full employment; the absence of inflation or deflation; and external balance.

Macroeconomic stability: the simultaneous existence of full employment, price level stability, and external balance.

In this ideal world, real GDP would grow at a rate consistent with the full utilisation of all of society's resources—increases in the availability of labour, land and capital would be accommodated smoothly. The average level of prices, as represented by the implicit price deflator (IPD) or the consumer price index (CPI), would be stable or almost stable. Additionally, the level of our current account deficit would be consistent with our ability to generate sufficient income to fund its components, while still maintaining full use of our resources and price-level stability. But actual experience with Australian capitalism indicates that full employment, a stable price level and external balance cannot be taken for granted. Hence, in Parts 2 and 3 we will explore the problem of achieving macroeconomic stability.

LEARNING OBJECTIVES

- **Describe the business cycle—the periodic fluctuations in output, employment and price levels that have characterised our economy.**
- **Examine unemployment in detail—its definition and measurement and the structure of unemployment.**
- **Discuss the economic and social problems associated with unemployment.**
- **Understand the causes and consequences of inflation, a problem that plagued us through the 1970s and 1980s.**
- **Discuss the history and changes in structure of Australia's balance of payments, with emphasis on the current account of the balance of payments.**
- **Discuss the relationship between the current account balance and the level of national savings.**

OVERVIEW OF THE BUSINESS CYCLE

Our society seeks economic growth, full employment, price-level stability and external balance along with other less quantifiable goals (see Chapter 1). An overview of Australian economic history provides evidence of quite remarkable economic growth. Technological progress, rapid increases in productive capacity and a standard of living among the highest in the world are elements of the dynamic character of our economy.

THE HISTORICAL RECORD

Our long-run economic growth has not been steady. Rather, it has been interrupted by periods of economic instability, as Figure 5.1 reveals. Periods of rapid economic expansion have sometimes been marred by inflation, that is, instability in the general level of prices. At other times, expansion has given way to recession and depression, that is, low or negative levels of employment and output growth. Indeed, on a few occasions, most notably in the 1970s and 1980s, we have had the unhappy experience of a rapidly rising price level and low rates of growth in output—and rising unemployment—at the same time. In short, both unemployment and inflation have interrupted and complicated the long-term trend of economic growth.

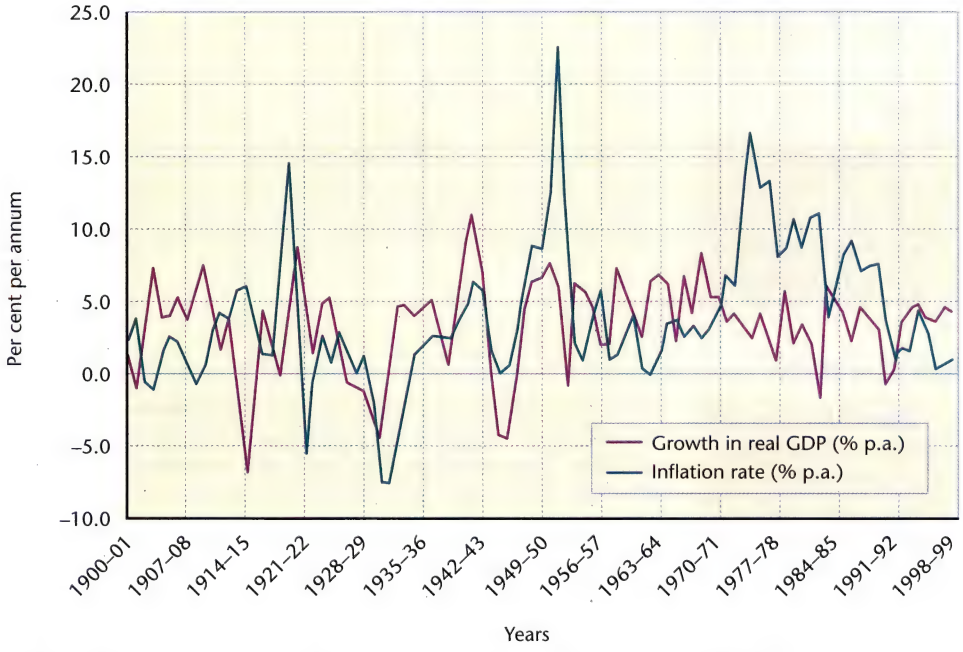


FIGURE 5.1
The Australian business cycle and rate of inflation

The Australian economy has experienced, alternately, periods of prosperity and recession. Recessions after World War II have been modest compared with the Great Depression of the 1930s, as has the level of volatility of real GDP. The price level has generally risen since the turn of the century. Two particularly sharp periods of increase are evident here: the Korean War period and the period 1966–1990.

SOURCE: Inflation rate 1900–01 to 1948–49 and growth rate of real GDP 1900–01 to 1948–49 derived from A. Maddison, Dynamic Forces in Capitalist Development: A Long-run Comparative View, *Oxford University Press, UK, 1991. Inflation rate 1949–50 to 1998–99 calculated from Australian Bureau of Statistics,* Consumer Price Index, *ABS Cat. No. 6401.0. Growth rate of real GDP 1949–50 to 1994–95 derived from Reserve Bank of Australia,* Australian Economic Statistics 1949–50 to 1994–95. *Growth rate of real GDP for 1995–96 to 1998–99 from Reserve Bank of Australia,* Bulletin, *various issues.*

PHASES OF THE BUSINESS CYCLE

Business cycle: the recurrent, somewhat cyclical, increases and decreases in the level or rate of growth in economic activity that typify the pattern of progress of our economy's real GDP over time.

Generally speaking, the term **business cycle** refers to the recurrent 'ups and downs' in the level of growth in economic activity that extend over a period of several years. Individual business cycles vary substantially in duration and intensity. Yet all involve common phases that are variously labelled by different economists. Figure 5.2 shows us an idealised business cycle, which can be compared to the actual pattern of Australia's business cycle described in Figure 5.1.

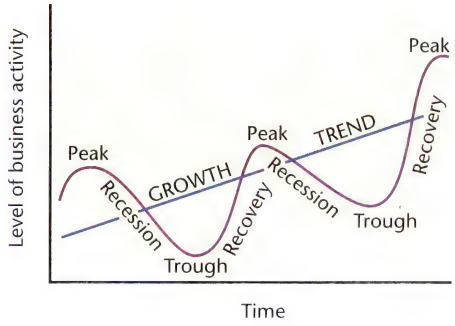


FIGURE 5.2
The business cycle

Economists distinguish between four phases of the business cycle and recognise that the duration or strength of each phase is highly variable. A recession, for example, need not always mean serious and prolonged unemployment. Nor need a cyclical peak always entail full employment.

PEAK

Cyclical peak: that point of the business cycle where economic activity has reached a temporary maximum.

We begin with a **cyclical peak** where economic activity has reached a temporary maximum, such as the middle peak in Figure 5.2. The economy is at full employment and the level of domestic output is also growing at, or very close to, capacity. The price level is likely to be rising during this cyclical phase.

RECESSION

Recession: a period where rates of growth in both output and employment decline to low or negative levels.

Depression: a severe and prolonged recession.

The cyclical peak is followed by a **recession**—a period where growth rates in the levels of output and employment both decline over two or more successive quarters. During this period there will be widespread reductions in growth in the level of economic activity in many sectors of the economy, for example manufacturing. However, although the level of output growth may fall in our economy, prices in our economy tend to be inflexible or 'sticky' in a downward direction. The price level is likely to fall only if the recession is severe and prolonged; that is, a **depression** occurs.

TROUGH

The **trough** of the business cycle is where output and employment growth 'bottom out' at their lowest levels. The trough may be short term or long term in duration.

RECOVERY

Recovery: the phase of the business cycle where the economy's levels of output and employment expand towards the full-employment or capacity level.

Finally, in the **recovery** phase the economy's levels of output and employment expand towards full employment. As recovery intensifies, the price level may begin to rise prior to the realisation of full employment and capacity production.

Despite common phases, specific business cycles vary greatly in duration and intensity. Indeed, some economists prefer to talk of *business fluctuations*, rather than cycles, because the latter term implies regularity whereas the former does not. The depression of the 1930s seriously undermined the level of business activity for an entire decade. By comparison, most of our post-World War II recessions have been relatively minor.



Concept highlights

- The business cycle refers to the cyclical increases and decreases in the level or rate of growth in economic activity observed in the pattern of progress of our economy's real GDP over time.
- The business cycle has four phases: the cyclical peak; recession or depression; trough; and recovery. The length of each phase is subject to significant variation.

CAUSATION: A FIRST GLANCE

Historically, economists have suggested a variety of theories to explain fluctuations in the level of business activity.

Some theories centre on innovation, contending that major innovations, such as the railways, the car or synthetic fibres, have a great impact on investment and consumption spending and therefore on output, employment and the price level. But these major innovations occur irregularly and thus contribute to the variability of economic activity.

Other economists have explained the business cycle in terms of political and random events. Wars, for example, are economically very disruptive. A virtually insatiable demand for war goods during hostilities can generate a period of overfull employment and sharp inflation, only to be followed by an economic slump when peace returns and military spending plummets.

Still other economists view the cycle as a purely monetary phenomenon. When government creates too easy a monetary environment, an inflationary boom is generated; a relative paucity of money precipitates a declining output and unemployment.

Despite this diversity of opinion, most economists concede that the immediate determinant of the levels of domestic output and employment is the level of aggregate expenditure. In an economy that is largely market-directed, businesses produce goods and services only if they can be sold profitably. Crudely stated, if total spending is low, many businesses do not find it profitable to produce a large volume of goods and services; hence, output, employment and the level of incomes are all low. A higher level of total spending means that more production is profitable; hence output, employment and incomes are all higher also. Later in this chapter we will find that the relationship between aggregate spending and the price level is more complex and that, in fact, inflation may arise from causes other than a change in total spending.

NON-CYCLICAL FLUCTUATIONS

Seasonal variations in business activity: regular fluctuations in the tempo of business activity that are independent of the business cycle, and that occur particularly in the retail industry (e.g. the pre-Christmas buying rush.

Secular trend: the average (or trend) rate of expansion or contraction of an economy over the long term.

It must not be concluded that all changes in business activity are due to the business cycle. On the one hand, there are **seasonal variations in business activity**. For example, the pre-Christmas buying rush causes considerable fluctuations each year in the tempo of business activity, particularly in the retail industry. Agriculture, the car industry, construction—indeed, virtually all industries—are subject to some degree of seasonality.

Business activity is also subject to a **secular trend**. The secular trend of an economy is its expansion or contraction over a long period, for example 25, 50 or 100 years. We simply note at this point that the long-run secular trend for Australian capitalism has been one of rather remarkable expansion (see Chapter 16). For present purposes, the importance of this long-run expansion is that the business cycle involves fluctuations in business activity around a long-run growth trend. Note that in Figure 5.1 the average (or trend) growth rate around which the cyclical fluctuations occur is about 3.3 per cent per annum for the entire period.

CYCLICAL IMPACT: DURABLES AND NON-DURABLES

The business cycle is pervasive; it is felt in virtually every nook and cranny of the economy. The interrelatedness of the economy allows few, if any, to escape the cold hand of depression or the fever of inflation. Yet we must keep in mind that various individuals and various segments of the economy are affected in different ways and to different degrees by the business cycle.

As far as production and employment are concerned, those industries producing capital goods and consumer durables are typically hardest hit by recession. The construction industry is particularly vulnerable. Output and employment in non-durable consumer goods industries—for example, the retail sector as a whole—are usually less sensitive to the cycle. Industries and workers producing housing and commercial buildings, heavy capital goods, farm implements, cars, refrigerators, and similar products bear the brunt of bad times. Conversely, these 'hard goods' industries seem to be stimulated most by expansion. Figure 5.3 confirms this point. Both the number of new passenger motor vehicles registered and the number of new house buildings approved show significant cyclical fluctuations, even over a 20-year period. Retail sales—dominated by food, alcohol, clothing and other non-durable consumption goods—are relatively stable. Two facts go far to explain the vulnerability of consumer industries to the cycle: *postponability* and *monopoly power*.

POSTPONABILITY

Within limits, the purchase of hard goods is postponable. Hence, as the economy slips into bad times, producers put off the acquisition of more modern productive facilities and the construction of new plants. The business outlook may simply not warrant increases in the stock of capital goods. In all probability the firm's present capital facilities and buildings are still useable and in excess supply. In good times, capital goods are usually replaced before they are completely depreciated; when recession strikes, however, business firms patch up their outmoded equipment and make it do. As a result, investment in capital

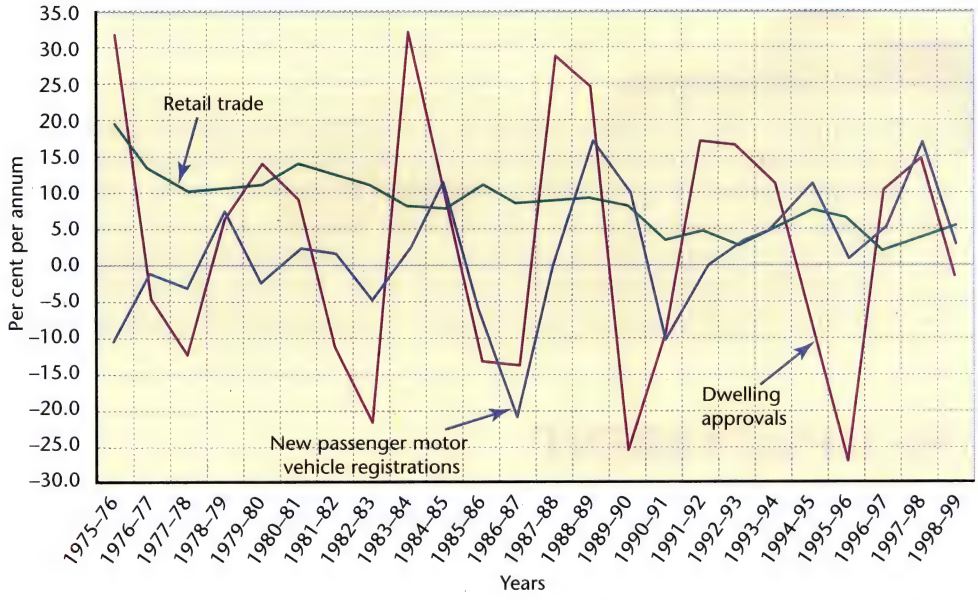


FIGURE 5.3
Growth in motor vehicle registrations, new dwellings approved and retail sales in Australia, 1975–76 to 1998–99

Each indicator of economic activity shows considerable fluctuation even over a short period of time.

SOURCE: Australian Bureau of Statistics, Monthly Summary of Statistics Australia, *ABS Cat. No. 1304.0, various issues.*

goods declines sharply. Chances are that some firms, having excess plant capacity, do not even bother to replace all the capital they are currently consuming. Net investment may be a negative figure.

Much of the same holds true for consumer durables. When recession rolls around and the family budget must be trimmed, it is likely that plans for the purchases of durables feel the axe first; you decide to make repairs on your old car rather than buy a new model.

Food and clothing—consumer non-durables—are a different story. A family must eat and must clothe itself. These purchases are much less postponable. True, to some extent the quantity and most certainly the quality of these purchases will decline but not so much as is the case with durables.

MONOPOLY POWER

Most industries producing capital goods and consumer durables are industries of high concentration, where a relatively small number of firms dominate the market. As a result, these firms have sufficient monopoly power to resist lowering prices by restricting supply in the face of a declining demand. Consequently, the impact of a fall in demand centres primarily upon production and employment. The reverse holds true in non-durable, or soft, goods industries, which are for the most part quite highly competitive and characterised by low concentration. Price declines cannot be resisted in such industries, and the impact of a declining demand falls to a greater extent on prices than on the levels of production.

Armed with this thumbnail sketch of the business cycle, we will now examine unemployment and inflation in more detail in the next section.

Concept highlights

- The business cycle has been explained in terms of such ultimate causal factors as innovations, political events and the stance of monetary policy. However, it is generally agreed that the level of aggregate demand is the immediate determinant of domestic output and employment.
- All sectors of the economy are affected by the business cycle, but in varying ways and degrees. The cycle has greater output and employment ramifications in the capital goods and durable consumer goods industries than it does in the non-durable goods industries.
- Over the cycle, price fluctuations are greater in competitive than in monopolistic industries.

UNEMPLOYMENT

Full employment: a situation of labour market balance consistent with output at the economy's potential output level. Cyclical unemployment is absent.

Full employment is an elusive concept to define. We could initially interpret it to mean that everyone who is in the labour market—100 per cent of the labour force—is employed. But such is not the case. Some unemployment is regarded as normal or warranted.

TYPES OF UNEMPLOYMENT

Let us approach the task of defining full employment by distinguishing between several different types of unemployment.

FRICTIONAL UNEMPLOYMENT

Frictional unemployment: the level of unemployment associated with the efficient movement of workers between jobs, due to voluntarily switching jobs, to seasonality and to labour market entry. Allows for the movement of labour from low-productivity to higher-productivity areas.

Given freedom of occupational and job choice, at any point in time some workers are 'between jobs'; that is, some workers are in the process of voluntarily switching jobs. Others have job connections but are temporarily laid off because of seasonality (for example, bad weather in the construction industry). And there are some workers, particularly young people, looking for their first jobs.

Economists use the term **frictional unemployment** for the group of workers who are unemployed for these kinds of reasons. Frictional unemployment is regarded as inevitable and, at least in part, desirable. Why desirable? Because workers typically move from low-paying, low-productivity jobs to higher-paying, higher-productivity positions. This means more income for the workers and better allocation of labour resources—and therefore a larger real output—for the economy as a whole.

STRUCTURAL UNEMPLOYMENT

Frictional unemployment blends with a second category, called **structural unemployment**. Important changes occur over time in the structure of consumer demand and in technology, which in turn alter the structure or the composition of the total demand for labour. Unemployment results because the

Structural unemployment: unemployment resulting from mismatches in the skills and geographical location of labour due to changes in the composition of the total demand for labour that have resulted from structural changes in consumer demand and in technology.

composition of the labour force does not respond quickly or completely to the new structure of job opportunities. As a result, some workers find that they have no readily marketable talents; their skills and experience have been made obsolete and unwanted by changes in technology and consumer demand. For example, years ago, highly skilled glass-blowers were thrown out of work by the invention of bottle-making machines. More recently, unskilled farm workers have been made redundant as a result of the mechanisation of agriculture. Some of these workers have migrated to the cities and have suffered prolonged unemployment because of insufficient skills.

The distinction between frictional and structural unemployment is hazy. The difference, essentially, is that frictionally unemployed workers have saleable skills, whereas structurally unemployed workers are not readily re-employable without retraining, additional education and possibly geographical movement. Frictional unemployment tends to have more of a short-term character, while structural unemployment is longer term and more serious.

CYCLICAL UNEMPLOYMENT

Cyclical unemployment: unemployment caused by the business cycle, that is, by a deficiency in aggregate demand or total spending.

By **cyclical unemployment** we mean unemployment caused by the business cycle, that is, by a deficiency of aggregate or total spending. As the overall level of business activity decreases, unemployment increases; as business activity increases, unemployment declines. Cyclical unemployment at the depth of the depression in 1931–32 reached 30 per cent of the labour force!

DEFINING 'FULL EMPLOYMENT'

Natural rate of unemployment: the sum of the rates of frictional and structural unemployment.

Full employment does not mean zero unemployment. Economists regard frictional and structural unemployment as essentially unavoidable; hence, full employment is defined as something less than employment of 100 per cent of the labour force. Specifically, the full-employment rate of unemployment—sometimes called the **natural rate of unemployment**—is equal to the total of the rates of frictional and structural unemployment. Stated differently, the full-employment rate of unemployment is achieved when cyclical unemployment is zero. The real level of domestic output that is associated with the natural rate of unemployment is called the economy's **potential output**, which is designated by Q_f.

Potential output: the real level of domestic output that is associated with the natural rate of unemployment.

From a slightly different vantage point, the full-employment (or natural) rate of unemployment is achieved when labour markets are in balance, in the sense that the number of job seekers equals the number of job vacancies. The 'natural' rate of unemployment is some positive amount because it takes time for frictionally unemployed job seekers to find appropriate job openings and, with regard to the structurally unemployed, it also takes time to achieve the skills and geographical location needed for re-employment.

If the number of job seekers exceeds the available vacancies, labour markets are not in balance; there is a deficiency of aggregate demand and cyclical unemployment is present. On the other hand, if aggregate demand is excessive there will be a 'shortage' of labour, in the sense that the number of job vacancies will exceed the number of workers seeking employment. In this situation the actual rate of unemployment is below the natural rate. This situation of unusually 'tight' labour markets is associated with inflation. Thus some economists alternatively define the 'natural' rate of unemployment as that unemployment rate at which the price level is stable. Stated differently, it is impossible to reduce unemployment below the 'natural' rate without causing inflation.

The concept of the 'natural' rate of unemployment merits elaboration in two respects. First, the term does not mean that the economy always operates at the natural rate and thereby realises its potential output. We have already suggested in our brief discussion of the business cycle that the economy may frequently operate at an unemployment rate in excess of the natural rate. On the other hand, the economy may on rare occasions achieve an unemployment rate lower than the natural rate. The second point is that the natural rate of unemployment itself is not an immutable constant, but rather is subject to revision because of the shifting demographics of the labour force or institutional changes.

There will obviously be considerable room for disagreement here. Some economists, looking back to the prosperous periods in the Australian economy, may argue that unavoidable unemployment is near 2 per cent of the labour force, or even lower. Other economists may point out that certain groups—in particular women and young workers who traditionally have quite high unemployment rates—are becoming more important in the labour force. It could also be argued that institutional changes have occurred. For example, unemployment benefits have at times been expanded in terms of both numbers of workers covered and size of benefits. This is important because, by cushioning the economic impact of unemployment, benefits may permit unemployed workers to engage in more leisurely job searching, so increasing the unemployment rate. Finally, substantial increases in the level and coverage of the minimum wage have boosted unemployment among teenage and other inexperienced workers. Many employers have simply found that the legal minimum wage exceeds the value of the output of many young workers and, therefore, it is not considered profitable to employ them.

Figure 5.4 illustrates the path of the measured unemployment rate over the past five decades. Note that, regardless of which of the above viewpoints holds true, the average level of unemployment has increased substantially since the early 1970s.

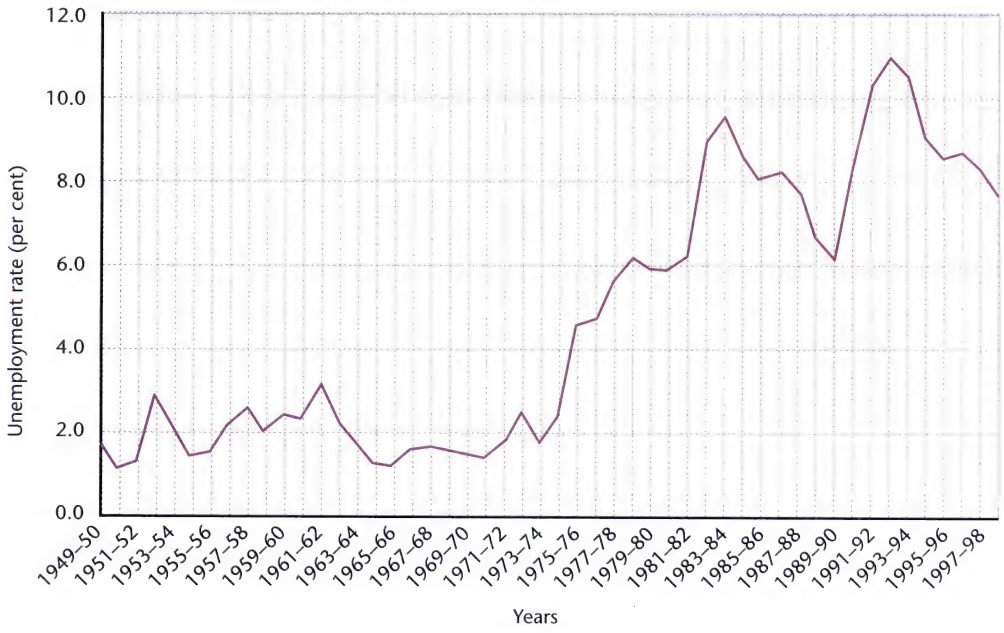


FIGURE 5.4
The unemployment rate

A substantial increase in the average level of the unemployment rate has occurred over the last two and a half decades. Most recently, the unemployment rate has stayed relatively high despite an apparently strong recovery from recession during the late 1990s.

SOURCE: Reserve Bank of Australia, Australian Economic Statistics 1949–50 to 1994–95*; 1995–96 to 1998–99 derived from Australian Bureau of Statistics,* The Labour Force, Preliminary, *ABS Cat. No. 6203.0.*

MEASURING UNEMPLOYMENT

The controversy over the full-employment rate of unemployment is complicated by problems encountered in the actual measurement of the rate of unemployment. Table 5.1 is a helpful starting point. First the civilian population aged 15 years and over is estimated. From this total is then subtracted the number of persons considered to be in the category 'not in the labour force'. This includes persons who were keeping house (unpaid), the retired, the voluntarily inactive, those permanently unable to work, inmates of institutions (hospitals, prisons, etc.), trainee teachers, members of contemplative religious orders, and those performing jury service or unpaid voluntary work for charitable organisations. Having adjusted the civilian population over 15 for those not in the workforce, we obtain the total labour force—(1) in Table 5.1. This figure is then broken into two groups, those who are employed[1]—(2)—and those who are unemployed[2] but actively seeking work—(3). The unemployment rate is simply the percentage of the labour force that is unemployed. This is the row labelled (3), expressed as a percentage of the row labelled (1). In June 1999, as Table 5.1 indicates, the unemployment rate was 6.9 per cent.

Table 5.1 The civilian labour force, employment and unemployment, June 1999 (thousands)

Civilian population aged 15 & over	14 982.1	
Not in labour force	5 540.1	
Total labour force		9 442.1 (1)
Employed: Full-time	6 449.3	
Employed: Part-time	2 344.3	
Employed: Total		8 793.6 (2)
Unemployed: Looking for full-time work	497.8	
Unemployed: Looking for part-time work	150.7	
Unemployed: Total		648.5 (3)
Unemployment rate (%)		**6.9**
Participation rate (%)		**63.0**

SOURCE: Australian Bureau of Statistics, The Labour Force, Preliminary, *ABS Cat. No. 6202.0, July 1999.*

The Australian Bureau of Statistics attempts to determine who is employed and who is not by conducting a nationwide survey of approximately one-half of 1 per cent of the population. A series of questions is asked about which members of the household are employed, unemployed, looking for work etc. Despite sophisticated sampling and interview techniques, the data are obviously subject to sampling error; that is, the sample cannot give a completely reliable view of the whole picture, simply because it is a sample. More importantly, the estimate of the unemployment rate can be subjected to a number of further criticisms.

PART-TIME EMPLOYMENT

The official data include all part-time workers as employed. Even the smallest number of hours of paid employment makes a person 'employed', part-time. Many part-time employees want to work full-time, but either cannot find suitable full-time work (or additional hours) or are on short hours because of a temporary

Underemployed: part-time employees who want to work more hours but either cannot find suitable full-time work or are on short hours because of a temporary slack in consumer demand.

slack in consumer demand. These workers are really **underemployed**. For example, of the estimated 2 057 100 employed part-time during September 1995, an estimated 24.3 per cent (499 600) would have preferred to work more hours. By counting these individuals as employed, the official data tend to understate the unemployment rate.

Given the evolving nature of employment relationships, particularly the desire for flexibility, we can expect part-time employment to continue to gain an increased share of total employment. The labour force may become increasingly polarised, with a substantial number of part-time (underemployed) workers co-existing with a core of full-time employees who work much longer than the 'standard' 38-hour week.

DISCOURAGED WORKERS

Discouraged workers: those workers who, after unsuccessfully seeking employment for a time, become discouraged and drop out of the labour force but would return if a suitable job prospect arose. Often termed the 'hidden unemployed'.

A person must be actively seeking work to be counted as unemployed; that is, an unemployed individual who is not actively seeking employment is simply classified as 'not in the labour force'. The problem is that there exists a sizeable number of workers who, after unsuccessfully seeking employment for a time, become discouraged and drop out of the labour force but would return if a suitable job prospect arose. While the number of **discouraged workers** or **'hidden unemployed'** is larger during recession than during prosperity, very many workers may fall into this category. By not counting discouraged workers as part of the numbers of the unemployed, official data tend to understate the unemployment rate. A growth in the number of discouraged workers provides the impression that both the proportion of the civilian population in the labour force and the unemployment rate are declining—a weight-of-numbers effect in the labour force and unemployment statistics—although the potential size of the labour force and the 'real' unemployment rate may be increasing.

Discouraged workers include:

- mature adults who have been made redundant and believe that their age is a barrier to future employment
- spouses of wage earners who are ineligible for unemployment benefits due to the incomes of their partners
- youths electing to undertake further studies rather than seek scarce jobs
- those who believe that a poor command of English reduces their competitiveness in the labour market (especially migrants from non-English-speaking backgrounds)
- some welfare recipients for whom a transfer to unemployed status provides little prospect of return owing to a lack of employment opportunities
- adults (usually women) who would enter the paid workforce if satisfactory child-care arrangements could be arranged.

Participation rate: those in the specified labour force group expressed as the percentage of the civilian population aged 15 and over in that specified group.

It is not possible to adjust unemployment rates based on the ABS definition to take account of discouraged workers *accurately*, other than to suggest that hidden unemployment may be significant in those groups with high official unemployment rates. An examination of the **participation rate** of the above groups may also provide an indication of the level of hidden unemployment; the lower the participation rate (all else being equal), the higher may be the level of hidden unemployment. The participation rate, for any group, is the labour force expressed as the percentage of the civilian population aged 15 and over in the same group. In each of the above cases, the presence of a higher than average unemployment rate, a lower than average participation rate, or both, suggests that these groups may contain significant numbers of discouraged workers.

An example of this is persons in the age group 15–19 years. Due to lower levels of education and a high unemployment rate—in this case 16.6 per cent at June 1999—we would expect a lower participation rate for this group relative to persons aged over 15 years. The participation rate for those aged 15–19 years confirms this—at 56.4 per cent it is considerably below the average of 63 per cent reported for the labour force as a whole.

DEFINITIONS USED TO DETERMINE THE UNEMPLOYMENT RATE

Clearly, the definitions used to define elements of the labour force and the unemployment rate are very precise—to measure anything we must be able to define it clearly. This precision may lead to the inclusion of individuals in labour force categories that we may not feel are entirely appropriate in our consideration of the unemployment rate. However, changes in definition will have a major impact on the measured rate of unemployment. For example, the inclusion in the labour force of those who were unemployed but were classified as not in the labour force during June 1999 due to attendance at school—47 000 individuals in total—would have increased the official unemployment rate in this period by a further 0.4 per cent to 7.3 per cent. If we expand the definition of the labour force to include those with a marginal attachment to the labour force, including discouraged workers, we would find that estimated unemployment would easily exceed 10 per cent or more!

FALSE INFORMATION

On the other hand, the unemployment rate may be overstated in that some respondents who are not working may claim they are looking for work, even though that is not the case. Hence, these individuals will be classified as 'unemployed', rather than 'not in the labour force'. The motivation for giving this false information is that an individual's unemployment or other benefits may be contingent on professed job pursuit. The presence of the underground economy (see Chapter 4) may also cause the official unemployment rate to be overstated.

The overall point to be made is that, although the unemployment rate is a basic consideration in policy making, it is subject to certain shortcomings. While the unemployment rate is one of the best measures of the economic condition of the nation, it is not an infallible barometer of our economic health.

ECONOMIC COST OF UNEMPLOYMENT

Regardless of the problems associated with measuring the unemployment rate and defining the full-employment rate of unemployment, above-normal unemployment creates great economic and social costs.

GDP GAP

GDP gap: the amount by which the actual level of GDP falls short of the potential level of GDP.

The basic economic cost of unemployment is forgone output. When the economy fails to generate enough jobs for all who are able and willing to work, potential production of goods and services is irretrievably lost. Economists measure this sacrificed output in terms of the **GDP gap**. This gap is simply the amount by which the actual level of GDP falls short of the potential level of GDP. We need, in passing, to underscore the close correlation that exists between the unemployment rate and the GDP gap; the higher the unemployment rate, the larger the GDP gap. For example, in Australia the gap between potential and actual GDP during the 1991 recession would have been about $44 344 million (measured in 1989–90 prices) of forgone production!

Okun's law: the quantified relationship between the unemployment rate and the GDP gap.

The American economist Arthur Okun quantified the relationship in the United States between the unemployment rate and the GDP gap. This relationship is known as **Okun's law**. Okun's law indicates that in recent years in Australia, for every 1 per cent that the actual unemployment rate exceeds the 'natural' rate, a GDP gap of over 3.5 per cent is generated.[3] This link between the unemployment rate and the GDP gap permits us to calculate the absolute loss of output associated with any unemployment rate. Note, however, that the quantification of the 'natural' rate of unemployment is crucial to this calculation.

UNEQUAL BURDENS

Aggregate figures conceal the fact that the cost of unemployment is unequally distributed. An increase in the unemployment rate from 10 to, say, 12 per cent may be more tolerable if every worker's hours of work and wage income were reduced proportionately. But, in fact, unemployment is borne more heavily by some groups than others. For example, data show that in June 1996 the unemployment rate was 8.0 per cent for the labour force as a whole. But the breakdown of this figure revealed startling inequities. Unemployment among male workers was 8.3 per cent, compared with 7.7 per cent for females. Among teenagers 15–19 years of age, the unemployment rate was 21.8 per cent for males and 17.0 per cent for females. Unemployment among Aboriginal people has often been over four times the national average.

NON-ECONOMIC COSTS

Unemployment is much more than an economic malaise; it is a social catastrophe as well. Depression means idleness. And idleness means loss of skills, loss of self-respect, a plummeting of morale, family disintegration and sociopolitical unrest. The following excerpts testify that during the depression of the 1930s conditions in Australia for many of the unemployed were appalling, not only in the immediate physical sense but also because of the impact on morale:

> *Thousands of honest, industrious men, able and willing to work, most of them with wives and families, find themselves for the first time in their lives without the means of paying off the obligations they have incurred for the purchase of their homes or their furniture, and with nothing to meet the daily needs of themselves and their families.*
>
> *It means actual physical privation for tens of thousands of women and children, or—what to most people is even worse—dependence on charity. It means the disappearance of their life's savings and the wreck of their hopes and plans for the future of their families.*[4]

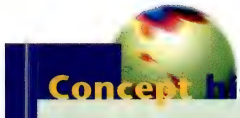
> *There were few odd jobs. There were no jobs for women. Clothing became frayed. Shoes could not be repaired even at home without leather.*
>
> *Sydney was ringed by soup kitchens. Many ministers of religion gave up their regular work to take charge of refuge centres for the homeless. Every night, thousands slept in the parks, on railway stations and in odd shelters. Next morning they would line up outside a food kitchen. The single man might get sufficient out of his coupons to last three or four days, then he would be back on the soup kitchen. In places like Pyrmont, Balmain, Newtown and other industrial centres, the unemployed came from all over the metropolitan area to get a bowl of soup. It kept them going. At 42 Hunter Street could be seen the unemployed lined up to scan the advertising page of the* Herald, *posted up outside to help them.*

In the streets were the shabby panhandlers cadging for pennies, or an occasional threepence. Sydney became a city of beggars. Many had held good jobs in the past, but their spirit had been broken. They had given up hope of ever getting back to regular employment. So they just drifted. Social workers were worried.[5]

Hundreds—nay, thousands—of the unemployed are not of the work-shirking, work-refusing, communistic, anti-social type. They are the decent, law-abiding, home-building, churchgoing citizens ... Most of them are eager for work, which prevailing conditions deny to them, and they are passing through a vale of suffering and sorrow which will leave a serious effect upon social conditions for years to come. Government sustenance, relief works, and voluntary charity are powerless to stem the tide of hardship, eviction, and hopelessness which is sweeping over Melbourne today. Morale is going. The habit of steady work is becoming dangerously undermined.

... Hospitals are crowded with adults and children whose complaints are often the result of insufficient nourishment. Families are threatened by disruption. Social workers, who are themselves facing an unprecedented strain upon their nervous energies, ask: Can nothing be done? Is there a way out, and if there is, who or what has placed a barrier across it?[6]

History makes it all too clear that severe unemployment is conducive to rapid and sometimes violent social and political change. Witness the movement to the left of political philosophy during the depression of the 1930s. Witness also Hitler's ascent to power against a background of unemployment. Further, in America, there can be no question that the heavy concentration of unemployment among blacks and other minorities has been an important cause of the unrest and violence which have plagued cities in recent years. In Australia, the current high level of youth unemployment is leading to a new era of teenage violence and crime.



Concept highlights

- We distinguish between frictional unemployment, present as a natural consequence of movement between occupations; structural unemployment, reflecting skill and geographic mismatches between the unemployed and positions available; and cyclical or demand-deficient unemployment.
- We measure unemployment by the unemployment rate. The unemployment rate represents the percentage of the labour force defined as unemployed. Accurate measurement of unemployment is complicated by the existence of part-time and discouraged workers.
- Some economists specify a full-employment rate of unemployment—or natural rate of unemployment—as low as 2 or 3 per cent, while others consider it to be as high as 6 or 7 per cent.
- The economic cost of unemployment, as measured by the GDP gap, consists of the goods and services society forgoes when its resources are involuntarily idle.
- Unemployment is conducive to a deterioration of national morale and is frequently associated with extensive social and political unrest.

INFLATION DEFINED AND MEASURED

Now let us turn to inflation as an aspect of economic instability. The problems posed by inflation are more subtle than those of unemployment and hence are somewhat more difficult to grasp.

THE MEANING OF INFLATION

Inflation is a rising general level of prices. This does not mean, of course, that all prices are necessarily rising. Even during periods of acute inflation, some specific prices may be relatively constant and others actually falling. Nor does inflation mean that prices rise evenly or proportionately. Indeed, one of the major sore spots of inflation lies in the fact that prices tend to rise very unevenly. Some spring upwards; others rise at a more leisurely pace; still others do not rise at all. Figure 5.1 gives us an overview of inflation in Australia. Note the more or less continuous increase in the price level since the start of World War II; this increase did not slow significantly until the 1990s.

MEASURING INFLATION

Inflation is measured by price index numbers such as those introduced in Chapter 4. You will recall that a price index measures the general level of price in reference to a base year. To illustrate—if the consumer price index uses 1989–90 as the base year, that year's price level is set equal to 100. At the end of 1991–92 the price index was at 107.3. This means that prices were 7.3 per cent higher on average in 1991–92 than in 1989–90 or, more simply put, a given collection of goods that cost $100 in 1989–90 cost $107.30 in 1991–92.

The rate of inflation can be calculated for any given year by taking the level of the price index in that year, subtracting the level of the index in the previous year, and dividing that difference by the level of the previous year's index. The result should then be presented as a percentage. For example, the CPI was 105.3 in 1990–91 and 107.3 in 1991–92. Hence the rate of inflation for 1991–92 is derived as follows:

$$\text{rate of inflation} = \frac{(107.3 - 105.3)}{105.3} \times 100\% = 1.9\%$$

The so-called **rule of 70** provides us with a different perspective for gaining a quantitative appreciation of inflation. Specifically, the rule allows us to calculate quickly the number of years required for a doubling of the price level. All we need do is divide the number 70 by the annual rate of inflation, that is:

$$\text{approximate number of years required to double the price level} = \frac{70}{\text{annual rate of increase (\%)}}$$

For example, a 3 per cent annual rate of inflation will double the price level in about 23 ($= \frac{70}{3}$) years. Inflation of 8 per cent per year will double the price level in about 9 ($= \frac{70}{8}$) years. Inflation at 12 per cent will double the price level in only about 6 years! You should note that the rule of 70 is generally applicable in that it will allow you, for example, to estimate how long it will take for real GDP or your savings account to double.

CAUSES: THEORIES OF INFLATION

Although we will explore the causes of inflation in greater detail in later chapters, it will be useful to 'anticipate' this later material now. Economists distinguish between two types of inflation.

DEMAND-PULL INFLATION

Demand-pull inflation: inflation resulting from excess demand for output. In this case the economy attempts to spend beyond its capacity to produce—beyond its 'potential' level of output.

Traditionally, changes in the price level have been attributed to an excess of total demand. The economy may attempt to spend beyond its capacity to produce—beyond its 'potential' level of output—seeking to achieve a point like *W* in Figure 2.1. This excess demand will bid up the prices of the fixed real output, causing what economists term **demand-pull inflation**.

However, the relationship between total demand on the one hand and output, employment and price level on the other is more complex than these terse comments suggest. Figure 5.5 is helpful in unravelling these complications.

In range 1, total spending—the sum of consumption, investment and government spending—is so low that the domestic output is far short of its full-employment level; a substantial GDP gap exists. Unemployment rates are high and businesses have a great deal of idle productive capacity. Now let us assume that total demand increases. Real domestic output rises and the unemployment rate falls, but there is little or no increase in the price level. The reason is that there are large amounts of idle human and property resources that can be put back to work at their existing prices. An unemployed worker does not ask for a wage increase during a job interview! In terms of the demand and supply analysis in Chapter 3, the price-raising effects of the assumed increases in demand are offset by the price-reducing effects of increases in supply. The increases in supply are possible because idle resources are available and the additional production is profitable. The net result is large output-increasing effects and no price-increasing effects.

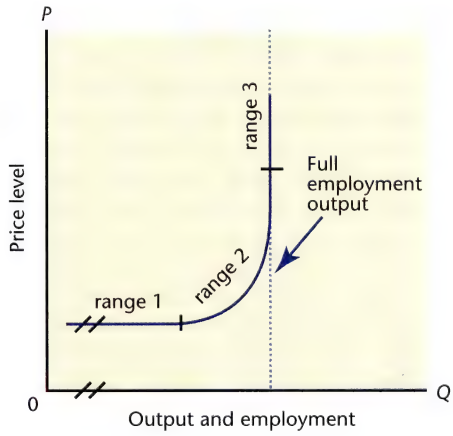


FIGURE 5.5
The price level and the level of employment

The price level generally begins to rise before full employment is reached. At full employment, additional spending tends to be purely inflationary.

As demand continues to rise, the economy enters range 2, where it is approaching full employment and is closer to fully utilising its available resources. But before full employment is achieved, the price level may begin to rise. Why? As production expands, supplies of idle resources do not vanish simultaneously in all sectors and industries of the economy—bottlenecks begin to develop. Some industries are fully utilising their productive capacity before others and cannot respond to further increases in demand for their products by increasing supply. So their prices rise. As labour markets tighten, some types of labour become fully employed and the money wages for these types rise. This increases production costs and prompts businesses to increase their prices. Tight labour markets enhance the bargaining power of unions and increase their ability to obtain sizeable wage increases. Businesses are less likely to resist union wage demands because they do not want to be faced with a strike at a time when the economy is becoming increasingly prosperous. Further, with aggregate demand rising, higher costs can be quite easily passed along to consumers through price increases. Finally, as full employment is approached, firms are

forced to employ less productive workers, and this contributes to rising costs and prices. The inflation that occurs in range 2 is sometimes called *premature* because it occurs before the economy reaches full employment.

Finally, as total spending increases into range 3, full employment is realised in all sectors of the economy. Industries in the aggregate can no longer respond to increases in demand with increases in supply. National output is now at a maximum and further increases in demand will cause demand-pull inflation. Total demand in excess of society's capacity to produce pulls the price level upwards.

Chapter 4 drew a distinction between money and real GDP that is helpful at this point. As long as the price level is constant (range 1), increases in money and real GDP are identical. But with premature inflation (range 2), money GDP is rising faster than real GDP, so money GDP must be 'deflated' to measure changes in physical output. With pure inflation (range 3), money GDP is rising—perhaps rapidly—but real GDP is constant.

The relationship expressed in Figure 5.5 is only partially reversible; that is, many product and resource prices that are flexible upwards as the economy approaches the full-employment output level become relatively rigid and inflexible when declines in total spending result in reductions in output and employment. This is primarily the result of monopolistic power—the ability to influence prices and wages—that many businesses and unions possess. Unions can usually resist wage cuts and sometimes secure modest wage boosts even though the total level of spending and therefore output and employment are falling. Monopolistic businesses are equally able to forestall reductions in product prices. Prices that go up during periods of full employment do not necessarily come down—at least all the way—when spending declines and unemployment ensues. It is not surprising that the long-run trend of the price level in Australian capitalism has been upwards.[7]

COST-PUSH OR SUPPLY-SIDE INFLATION

Cost-push inflation: inflation that arises on the supply or cost side of the market, often explained in terms of the market power of unions and businesses.

Wage-push inflation: cost-push inflation initiated through wage increases obtained by unions.

Profit-push inflation: inflation brought about by big businesses through their power to adjust or administer price increases not initiated or justified by increases in wage costs.

Inflation may also arise on the supply or cost side of the market. The cost-push theory of inflation explains rising prices in terms of the market power of unions and businesses. Unions have considerable control over wage rates. Indeed, they have enough market power so that even with a moderate deficiency of total demand, some unemployment, and some unutilised industrial capacity, the stronger unions can obtain wage increases. Large-company employers, faced now with increased costs but also in the possession of considerable market power, push their increased wage costs and 'something extra' on to consumers by raising the prices of their products. This theory is obviously based on the presumption that both unions and businesses typically possess a significant degree of market power and therefore, within limits, can manipulate wages and prices independently of overall conditions of total demand. Thus we find that **cost-push inflation** is sometimes labelled *administered-price inflation* or simply *seller's inflation*.

Not surprisingly, management contends that wage increases initiate price increases and therefore unions are obviously the villains in the cost-push inflation scenario. This is the **wage-push** variant of cost-push inflation. Labour counters by charging that big businesses have the power to adjust or administer price increases that are neither initiated nor justified by increases in wage costs. This constitutes the **profit-push** variant of cost-push inflation. A final variant of cost-push inflation, labelled **supply-side shocks**, traces rising product prices to increases in the costs of raw materials, inputs or energy, for example oil prices.

Supply-side shocks: rising product prices caused by increases in costs of raw materials, inputs or energy.

It must be emphasised that these two theories, demand-pull and cost-push, are not unrelated or mutually exclusive. Both can operate simultaneously. For example, the exertion of market power may cause cost-push forces to accentuate demand-pull inflation, particularly in those industries where unions are strong and businesses concentrated.

REDISTRIBUTIVE EFFECTS OF INFLATION

Let us now shift our attention from causes to effects. We will first consider how inflation capriciously redistributes income; then we will examine possible effects on domestic output.

As we shall see shortly, the relationship between the price level and domestic output is ambiguous. Traditionally, real output and the price level have risen and fallen together. However, in the 1980s and 1990s we have experienced occasions when real output has fallen while prices have continued to rise. We will dodge this issue for a moment by assuming that the real output is constant and at the full-employment level. By holding real output and income constant we can better isolate the effects of inflation on the distribution of that income. Assuming that the size of the national income pie is fixed, how does inflation affect the size of the slices going to different income receivers?

Nominal (or money) income: the number of dollars received as wages, rent, interest or profits.

Real income: the amount of goods and services that can be purchased with money income.

In answering this question it is critical to understand the difference between money (or nominal) income and real income.[8] **Money** or **nominal income** is simply the number of dollars you receive as wages, rent, interest or profits. **Real income** measures the amount of goods and services your money income can buy. A moment's reflection will make it clear that, if your money income increases faster than does the price level, then your real income will rise. Conversely, if the price level increases faster than your money income, then your real income will decline. The change in your real income can be approximated through this simple formula:

$$\begin{array}{c}\text{percentage change}\\ \text{in real income}\end{array} = \begin{array}{c}\text{percentage change}\\ \text{in nominal income}\end{array} - \begin{array}{c}\text{percentage change}\\ \text{in price level}\end{array}$$

Thus, if your nominal income rises by 10 per cent in a given year, and the price level rises by 5 per cent in the same period, your real income will increase by about 5 per cent. Conversely, a 5 per cent increase in money income accompanied by 10 per cent inflation will decrease your real income by approximately 5 per cent.[9] A decline in your real income or standard of living occurs only when your nominal income fails to keep pace with inflation.

Finally, we must note that the redistributive effects of inflation are quite different, depending upon whether or not it is anticipated. If inflation is expected, an income receiver may be able to take steps to avoid or mitigate the adverse effects inflation would otherwise have upon real income. In the discussion that follows, generalisations are given that will initially assume **inflation is unanticipated**. Then we will modify our generalisations by taking the **anticipation of inflation** into account.

FIXED-NOMINAL-INCOME RECEIVERS

Our prior distinction between money and real incomes makes it clear that inflation penalises people living on relatively fixed nominal incomes. The classic case is the elderly couple living on a private pension or annuity that provides a fixed amount of money income each month. A 10 per cent annual increase in the price level will reduce the real income of this couple by about 10 per cent

per year. To a lesser extent, some white collar workers, some public sector employees, and families living on welfare and other transfer income that remains fixed over extended periods of time will be victims of inflation. Note, however, that the adverse redistributive effect of inflation on social security recipients has been offset to some extent by increases in the size of benefits.

People living on flexible incomes may benefit from inflation. The money incomes of such households may spurt ahead of the price level, or cost of living, with the result that their real incomes are enhanced. Workers employed in expanding industries and represented by vigorous unions may keep their wage incomes apace with, or ahead of, the rate of inflation. However, some wage earners are hurt by inflation. Those situated in declining industries or without the benefit of strong, aggressive unions may find that the price level skips ahead of their money incomes.

Businesses and other profit receivers may benefit from inflation. If product prices rise faster than resource prices, business receipts then grow at a faster rate than costs do. Thus some profit incomes will outdistance the rising tide of inflation.

SAVERS

Inflation also casts its evil eye on savers. As prices rise, the real value, or purchasing power, of savings deteriorates. Savings accounts, insurance policies, annuities and other fixed-value paper assets that were once adequate to meet rainy-day contingencies, or to provide for a comfortable retirement, decline in real value during inflation. The simplest case is the individual who hoards money as a cash balance. Of course, most forms of savings earn interest. But the value of your savings still declines if the rate of inflation exceeds the rate of interest. To illustrate—a household may save $1000 in a savings bank at, say, 6 per cent interest. But if inflation is 13 per cent, the real value or purchasing power of that $1000 will be cut to about $938 at the end of the year; that is, the saver will receive $1060 (equal to $1000 plus $60 of interest), but deflating that $1060 for 13 per cent inflation means that the real value of $1060 is only about $938 (equal to $1060 divided by 1.13).

DEBTORS AND CREDITORS

Inflation also redistributes income by altering the relationship between debtors and creditors. Specifically, inflation tends to benefit debtors (borrowers) at the expense of creditors (lenders). Suppose you borrow $1000 from a bank, which you are to repay in two years. If in that period the general level of prices were to double, the $1000 you repay will have only half the purchasing power of the $1000 originally borrowed. True, if we ignore interest charges, the same number of dollars is repaid as was borrowed. But because of inflation, each of these dollars now buys only half as much as it did when the loan was negotiated. As prices go up, the value of the dollar comes down. Thus, because of inflation, the borrower is given 'dear' dollars but pays back 'cheap' dollars.

ANTICIPATED INFLATION

The redistributive effects of inflation are less severe if transactors anticipate inflation and have the capacity to adjust their money incomes to reflect expected price-level changes. For example, the prolonged inflation experienced from the early 1970s until the late 1980s prompted many unions to insist on cost-of-living adjustments, via indexation, in claims to arbitration commissions (see

Chapter 15). Similarly, the noted redistribution of income from lender to borrower might be altered if inflation is anticipated. Suppose that a lender (perhaps a bank) and a borrower (a household) both agree that 5 per cent is a fair rate of interest on a one-year loan, provided the price level is stable. But let us assume inflation has been occurring and both lender and borrower agree it is reasonable to anticipate a 6 per cent increase in the price level over the next year. If the bank lends the household $100 at 5 per cent, the bank will be paid back $105 at the end of the year. But if 6 per cent inflation does occur during the year, the purchasing power of that $105 will have been reduced to about $99. The lender will in effect have paid the borrower $1 to use the lender's money for a year!

The lender can avoid this curious subsidy simply by increasing the interest rate by the amount of the anticipated inflation; that is, by charging 11 per cent the lender will receive $111 at the end of the year which, adjusted for the 6 per cent inflation, has the real value or purchasing power of about $105. In this instance there is a mutually agreeable transfer of purchasing power from borrower to lender of $5 or 5 per cent for the use of $100 for one year.

Real interest rate: the percentage increase in purchasing power that a lender receives from a borrower in exchange for the borrower's use of the lender's funds.

Note that most mortgages have a variable rate of interest. This is designed to protect the financial institutions from the adverse effects of inflation. Incidentally, note that the above example implies that, rather than being a cause of inflation, high money-interest rates are a consequence of inflation.

Our example also points out the difference between the real rate of interest on the one hand and the money, or nominal, rate of interest on the other. The **real interest rate** is the percentage increase in purchasing power that the lender receives from the borrower. In our example, the real interest rate is 5 per cent. The **nominal interest rate** is the percentage increase in money that the lender receives. The nominal rate of interest is obviously 11 per cent in our example. The difference in these two concepts is that the real interest rate is adjusted or 'deflated' for the expected rate of inflation, while the nominal interest rate is not. Stated differently, the nominal interest rate is the sum of the real interest plus the premium paid to offset the expected rate of inflation.

Nominal interest rate: the percentage increase in money that the lender receives from the borrower.

EMPIRICAL EVIDENCE

Research in the United States suggests that, since World War II, inflation in Western economies has brought about a massive redistribution of wealth from the household to the public sector of the economy.[10] There are two reasons for this. First, the governments of these economies have incurred very large debts and, to a considerable extent, government bonds have been held by households; that is, governments are large debtors and households have been their creditors. The post-war inflation has consequently shifted wealth from households to government. Secondly, the income tax rates put in place by these governments are progressive. Hence, as money incomes inflate, individuals and families are pushed into higher tax brackets and pay a larger percentage of their incomes to government. This phenomenon is called 'bracket creep', or 'taxflation'. Given these redistributive consequences, some economists have wondered out loud whether society can really expect government to be particularly zealous in its efforts to halt inflation.

Debtor status is undoubtedly important in assessing the redistributive impact of inflation upon the various income classes. Data suggest that inflation seems to hit the very poor and the very rich the hardest, while providing some benefit for middle-income and upper-middle-income receivers. Here is the explanation: the poor have few debts because no one will lend to them; the rich have relatively few debts because they are rich! Thus, neither the poor nor the rich benefit as

debtors from inflation. But the middle-income and upper-middle-income classes are heavily in debt, and they do benefit from inflation.

Finally, the relative importance of indebtedness suggests that inflation tends to transfer wealth from the elderly to the young. The former owe little, whereas the latter are heavily in debt as the result of setting up households, and borrowing heavily to buy houses, cars, furniture and the like and to finance their children's education.

Two final points must be appended to this discussion. First, the fact that any given family is likely to be, simultaneously, an income earner, a holder of financial assets and an owner of real assets is likely to cushion the redistributive impacts of inflation. For example, if the family owns fixed-value monetary assets (savings accounts, bonds and insurance policies), inflation will lessen their real value. But that same inflation is likely to increase the real value of any property assets (house, land) which the family owns. In short, many families are simultaneously hurt and benefited by inflation. All these effects must be considered before we can conclude that the family's net position is better or worse because of inflation.

The second point to be re-emphasised is that the redistributive effects of inflation are arbitrary, as they occur without regard to society's goals and values. Inflation lacks a social conscience and takes from some and gives to others, regardless of whether they are rich, poor, young, old, healthy or infirm.

OUTPUT EFFECTS OF INFLATION

We have assumed so far that the economy's real output is fixed at the full-employment level. As a result, the redistributive effects of inflation and deflation have been, for some groups, gaining absolutely at the expense of others. If the size of the pie is fixed and inflation causes some groups to get larger slices, other groups must necessarily get smaller slices. But, in fact, the level of domestic output may vary as the price level changes.

There is, frankly, much uncertainty and disagreement about whether inflation is likely to be accompanied by a rising or a falling real domestic output. Let us briefly consider three scenarios, the first of which associates inflation with an expanding output and the remaining two with a declining output.

STIMULUS OF DEMAND-PULL INFLATION

Some economists argue that full employment can be achieved only if some modest amount of inflation is tolerated. They base their reasoning on Figure 5.5. We know that the levels of real domestic output and employment depend upon aggregate spending. If spending is low, the economy operates in range 1. In this range there is price-level stability, but real output is substantially below its potential and the unemployment rate is high. If aggregate spending now increases to the extent that the economy moves into range 2, we find that society must accept a higher price level—some amount of inflation—to achieve these higher levels of real output and the accompanying lower unemployment rates. Of course, if further increases in aggregate spending pull the economy into range 3, that spending is purely inflationary because the full-employment or capacity level of real domestic output has been reached.

The critical point for present purposes is that in range 2 there appears to be a trade-off between output and employment on the one hand and inflation on the other. Some moderate amount of inflation must be accepted if we are to realise high levels of output and employment. The high levels of spending that give us

higher levels of output and low unemployment rates also cause some inflation. Stated differently, an inverse relationship may exist between the inflation rate and the unemployment rate.

This scenario has been criticised in recent years. Some economists feel that any trade-off between the inflation rate and the unemployment rate is a transitory, or short-run, phenomenon at best and that there is no such trade-off in the long run. This controversy will be explored in detail in Chapter 14.

COST-PUSH INFLATION AND UNEMPLOYMENT

Let us now outline an equally plausible set of circumstances where inflation might cause both output and employment to decline. Suppose the level of aggregate spending is initially such that the economy is enjoying full employment and price-level stability. If cost-push inflation now occurs, the amount of real output that the existing level of total spending will buy is reduced; that is, a given level of total spending is only capable of taking a smaller real output off the market when cost-push pressures boost the price level. Hence, real output falls and unemployment rises.

Economic events of the 1970s lend support to this scenario. In late 1973 the Organisation of Petroleum Exporting Countries (OPEC) became effective and exerted its market power to quadruple the price of oil. In Australia at about this time, massive wage increases were also obtained under a system of collective bargaining by the unions, with wages growing at about 28 per cent throughout 1974. These cost-push inflationary effects generated rapid price increases in the 1973–75 period, with inflation rising from just over 6 per cent at the beginning of 1973 to over 16 per cent by June 1975. At the same time, the unemployment rate rose from 1.8 per cent in 1973 to 4.6 per cent in 1975.

Business IMPLICATION

THE IMPORTANCE OF TRENDS



The release of the latest economic statistics on output growth, unemployment, wages and prices growth, the level of the current account balance and myriad other pieces of information on the Australian economy has become front-page news of late. However, with all this focus on the importance of the latest statistic released by the ABS on the performance of an aspect of the Australian economy, many have forgotten that the numbers are just *statistics*.

Unemployment rates, for example, are determined on the basis of a sample of households, so we should expect the measured rate to vary as the households surveyed change over time. In the case of GDP and the level of the current account balance, we know that current estimates will be revised, often significantly, over several years to come.

The presence of sampling errors and revision due to the collection of additional data suggests that we should not place too much weight on any one statistic. Rather, we need to observe the trends in the level or rate of change of each statistic over a period of time to determine its overall significance. Thus, if the unemployment rate increases (or does not decrease) over a number of time periods we may be concerned. If the level of GDP growth is consistently low or the level of the current account is consistently high over a number of periods, we may also be concerned. One-off increases or decreases in statistics that are not reflected in later figures should be less of a concern.

HYPERINFLATION AND BREAKDOWN

Hyperinflation: sustained, very rapid increase in the level of prices (very high inflation), leading to rapid erosion of the value of the monetary unit.

Some other economists express anxiety over our first scenario. They are fearful that the mild, 'creeping' inflation that might initially accompany economic recovery may snowball into a more severe **hyperinflation**, which can ultimately have a devastating effect upon domestic output and employment. The contention is that, as prices persist in creeping upwards, households and businesses come to expect them to rise further. So, rather than letting their idle savings and current incomes depreciate, people are induced to 'spend now' to beat anticipated price rises. Businesses do the same in buying capital goods.

Action on the basis of this 'inflationary psychosis' intensifies the pressure on prices, and inflation feeds upon itself. Further, as the cost of living rises, workers demand and get higher money wages. Indeed, unions may seek wage increases sufficient not only to cover last year's price-level increase, but also to compensate for the inflation anticipated in the future. Prosperity is not a good time for business firms to risk strikes by resisting such demands. Business managers recoup their rising labour costs by boosting the prices they charge consumers. And, for good measure, businesses are likely to jack prices up an extra notch or two to be sure that profit receivers keep abreast or ahead of the inflationary parade.

As the cost of living moves upwards as a result of these price increases, workers once again have an excellent excuse to demand another round of substantial wage increases. But this triggers another round of price increases. The net effect is a cumulative **wage–price inflationary spiral**. Money-wage and price rises feed upon each other, and this helps creeping inflation burst into galloping inflation.

Wage–price inflationary spiral: a continuous cycle of money-wage and price rises that feed upon each other.

Aside from its disruptive redistribution effects, it is alleged that hyperinflation can precipitate economic collapse. Severe inflation encourages a diversion of effort towards speculative activity and away from productive activity. Businesses may find it increasingly profitable to hoard both materials and finished products in anticipation of further price increases. But, by restricting the availability of materials and products relative to the demand for them, such actions tend to intensify inflationary pressures. Rather than invest in capital equipment, businesses and individual savers may purchase non-productive wealth—jewels, gold and other precious metals, real estate, and so on—as hedges against inflation.

In the extreme, as prices shoot up sharply and unevenly, normal economic relationships are disrupted. Business owners do not know what to charge for their products, and consumers do not know what to pay. Resource suppliers want to be paid in kind, rather than with rapidly depreciating money. Creditors avoid debtors to delay repayment of debt, reducing its real value.

Money becomes virtually worthless and ceases to do its job as a standard of value and medium of exchange. The economy may literally be thrown into a state of barter. Production and exchange grind to a halt, and the net result is economic, social and, very possibly, political chaos. Hyperinflation has precipitated monetary collapse, depression and sociopolitical disorder.

Unfortunately, history reveals a number of examples that fit this gloomy scenario. These are typically instances of wartime or war-associated inflation that accelerated into hyperinflation, with disastrous results.

Consider the effects of World War II on price levels in Hungary and Japan:

> *The inflation in Hungary exceeded all known records of the past. In August 1946, 828 octillion (1 followed by 27 zeros) depreciated pengos equalled the*

value of 1 pre-war pengo. The price of the American dollar reached a value of 3×10^{22} (3 followed by 22 zeros) pengos ... Prices rose some 116 times in Japan, 1939 to 1948.[11]

The German inflation of the 1920s was also catastrophic:

The German Weimar Republic is an extreme example of a weak government which survived for some time through inflationary finance. On 27 April 1921, the German government was presented with a staggering bill for reparations payments to the Allies of 132 billion [thousand million] gold marks. This sum was far greater than what the Weimar Republic could reasonably expect to raise in taxes. Faced with huge budget deficits, the Weimar government simply ran the printing press to meet its bills.

During 1922, the German price level went up 5470 per cent. In 1923, the situation worsened; the German price level rose 1 300 000 000 000 times. By October of 1923, the postage on the lightest letter sent from Germany to the United States was 200 000 marks. Butter cost 1.5 million marks per pound, meat 2 million marks, a loaf of bread 200 000 marks, and an egg 60 000 marks. Prices increased so rapidly that waiters changed the prices on the menu several times during the course of a lunch. Sometimes customers had to pay double the price listed on the menu when they ordered.

Photographs of the period show a German housewife starting the fire in her kitchen stove with paper money and children playing with bundles of paper money tied together into building blocks![12]

A word of caution is necessary. Such dramatic hyperinflations as these examples are almost invariably the consequence of imprudently expansionist monetary policy by government. Given appropriate public policies, there is no reason why mild or creeping inflation need become hyperinflation.

Concept highlights

- We measure inflation as the percentage increase in the level of a price index from period to period. Usually this price index is based on a representative basket of goods and services consumed by the average household. In Australia, the price index usually referred to is the consumer price index (CPI).
- Inflation may have various causes, as is suggested by the demand-pull, cost-push and structural theories of inflation. The demand-pull theory of inflation suggests that some inflation may be necessary if the economy is to realise high levels of output and employment. However, the cost-push theory of inflation indicates that inflation may be accompanied by declines in real output and employment.
- Unanticipated inflation tends to redistribute income arbitrarily at the expense of fixed-income receivers, creditors and savers. If inflation is anticipated, individuals and businesses may take steps to mitigate its adverse effects.
- Hyperinflation, which is usually associated with injudicious increases in the money supply, could undermine the monetary system and precipitate economic collapse.

AUSTRALIA'S BALANCE OF PAYMENTS—THE CURRENT ACCOUNT PROBLEM

A few unique features of Australia's involvement in trade and its need to access the international capital markets have dominated the pattern of Australia's balance of payments in the last few decades.

First, Australia is a small open economy that is primarily an exporter of agricultural and mineral products and an importer of manufactures (see Chapter 19 of the companion book *Microeconomics*, 6th edition). As a result, Australia has faced gradual deterioration in its **terms of trade**. Second, because of its distance from major trading partners, the costs of freight and transport have been high. Third, Australia has traditionally been dependent on large levels of capital inflow to sustain its economic growth. This has meant a continuous and growing amount of interest payments to service, represented in the large negative net income component of the current account balance (see Chapter 4). These three factors have combined to create continuous pressure on the level of the **current account**, which was in **deficit** to the tune of $33 022 million in 1998–99.

Terms of trade: the ratio of the average price of the goods and services exported by a country to the average price of its imports.

Figures 5.6 and 5.7 present the major components of the current account and the capital and financial accounts of Australia's balance of payments over the 1960–61 to 1998–99 period. Note that prior to the float of the Australian dollar in December 1983, it was possible for Australia to run a deficit in the balance of payments. This was reflected in negative net official monetary movements, now a component of the reserve assets component of the financial account that is linked to the Reserve Bank of Australia's holding of assets (see Chapter 4). Armed with this information, we will now summarise the broad pattern of events associated with changes in Australia's balance of payments over this period, with a particular emphasis on the current account.

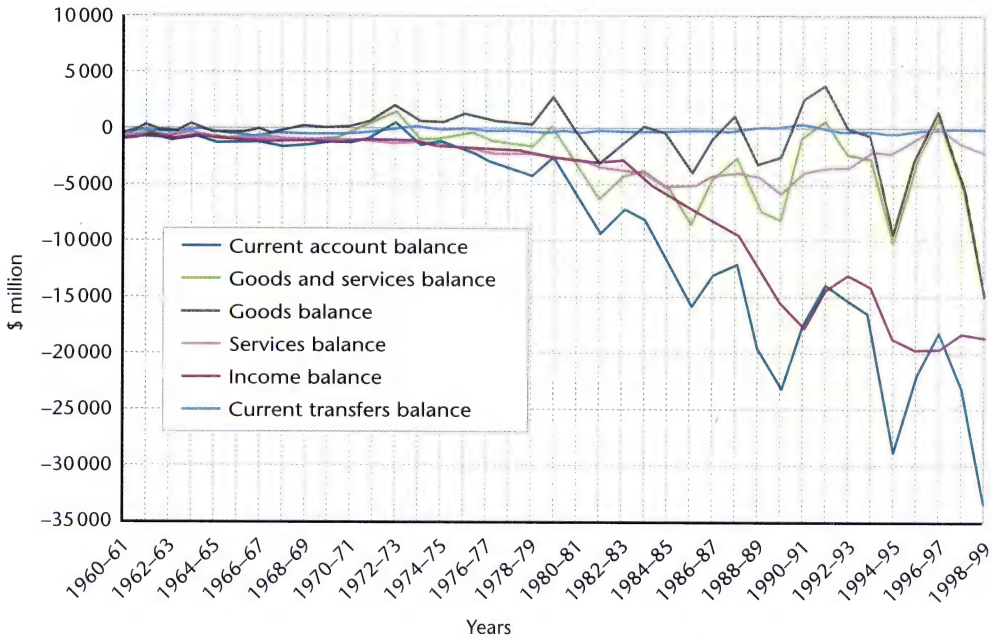


FIGURE 5.6
Components of the current account balance, 1960–61 to 1998–99

Australia's current account has traditionally been in deficit. Large increases in the levels of foreign investment in Australia since the late 1970s have seen a substantial deterioration in the level of the income balance component of the current account balance throughout the 1980s and 1990s.

SOURCE: Australian Bureau of Statistics, Balance of Payments, *ABS Cat. No. 5302, various issues.*

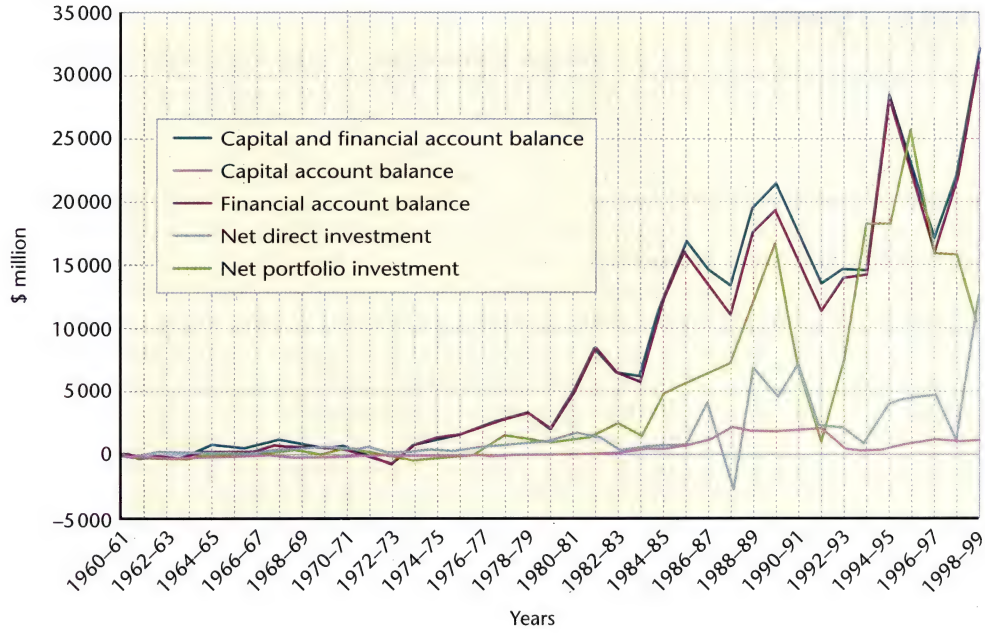


FIGURE 5.7
The capital account and financial account balances and components, 1960–61 to 1998–99

Australia has traditionally relied on foreign capital to fund its investments. Large increases in the level of foreign investment in Australia have occurred since the late 1970s. In particular, there has been a substantial increase in the importance of net portfolio investment.

SOURCE: Australian Bureau of Statistics, Balance of Payments, *ABS Cat. No. 5302, various issues.*

THE PERIOD TO THE END OF THE 1970s

The Australian balance of trade (goods balance) was almost always positive until the early 1980s since the total value of goods exported exceeded that of imports. The positive balance of trade was, however, regularly swamped by high levels of transport costs—associated with a services balance deficit and with substantial property incomes paid for the services of foreign capital—thus producing a deficit on the income balance. In short, the Australian current account balance was usually in deficit.

The deficit on current account was offset for the majority of the period by surpluses on the capital and financial account. However, at the beginning of the 1970s, large net capital inflows more than outweighed current account deficits and resulted in balance of payments surpluses. From 1972 onwards, much lower net capital inflows, associated with the activities of the Whitlam Labor government, teamed with increasing current account deficits to produce overall balance of payments deficits rather than surpluses.

The late 1970s found the Fraser coalition government borrowing substantially overseas to counteract a growing deficit on current account and only mild improvements in foreign investment in companies. For example, in 1977 nearly $2000 million were borrowed—mostly United States dollars, Deutschmarks and yen. The justification for the borrowing program was that it would enable Australia to 'mark time' on the capital account. In other words, the government was prepared to see external debt mount, while waiting for investment inflow to pick up. This required that interest rates remain relatively attractive and that inflation, relative to Australia's trading partners, be greatly checked.

THE 1980s

Total **foreign investment** in companies, both **direct** and **portfolio**, started to pick up by the end of the 1970s and escalated in the early 1980s (see Figure 5.7). Meanwhile, the pressure on the current account mounted as the balance of trade frequently became negative in response to increases in the rate of economic growth, and overseas debt required larger interest payments—reflected in a growing deficit on the income balance. This scenario faced the Hawke Labor government elected in 1983. In December of that year, a major change in Australian exchange rate setting was made when the Australian dollar was floated. This step was taken partly to stem the tide of speculative capital inflow and partly to relieve inflationary growth in the money supply.

From 1984–85 to 1985–86, Figure 5.6 indicates that the balance of trade was negative and worsening, a fact driven by the strength of growth in the economy during this period. Consequently, the deficit on the current account also worsened. There was also evidence that much of the capital inflow was portfolio rather than direct in nature (Figure 5.7). This continued heavy reliance on overseas funds—a large and increasing financial account surplus—to finance local investment and acquisitions quickly led to a rapid deterioration in the income balance component of the current account. Given the continued poor performance on the goods and services balance, these inflows of foreign funds were sustained by holding interest rates high.

THE 1990s

The period from 1989–90 to 1991–92 saw a gradual reduction in the level of capital inflows, due to reductions in interest rates (see Chapter 12), rather than a general improvement in the goods and services balance and the income balance components of the current account balance. Although the balance of trade and the services balance improved greatly over the 1989–90 to 1991–92 period, this reflected the onset and impact of recession in Australia and the low and negative growth rates in real GDP (Figure 5.1).

As Australia recovered from the recession over the 1992–93 to 1995–96 period, the balance of trade again moved into deficit. Although improving substantially, the services balance still also remained in deficit. The resulting deterioration in the deficit on the current account balance has largely been funded by substantial increases in the levels of net direct and portfolio investment in Australia. This has continued to place substantial pressure on the current account balance, due to its consequences for the income balance component of the current account balance. By 1998–99 the income balance component represented over 55 per cent of the deficit on the current account balance.

The late 1990s saw a reasonable stabilisation in the deficits on both the services and income balances, with neither showing severe trends downwards in the later part of the decade. However, the current account balance continued to deteriorate sharply in the late 1990s as a result of the impact of the 'Asian crisis' on Australia's goods balance. Strong growth in Australia, combined with weak and sometimes negative growth on the part of many of our regional trading partners, has seen the goods balance deteriorate sharply. This has also been associated with substantial increases in the levels of the financial account balance (Figure 5.7), suggesting that Australia has borrowed heavily to fund its continued growth.

Australia's challenge of turning the goods and services balance around sufficiently to fund the deficit on the income balance still remains a priority, along with its need to reduce reliance on foreign capital by improving its level of national saving. This topic is discussed in the next section.

Concept highlights

- Under freely floating exchange rates, a deficit/surplus on the current account will be largely offset by a surplus/deficit on the capital and financial account. If the Reserve Bank does choose to intervene, this will be reflected in the Reserve Bank component of the financial account.
- Australia has traditionally relied on foreign capital in the form of direct and portfolio investment to fund increases in its stock of capital. A continued reliance on foreign investment has seen a rapid deterioration in the level of the net income deficit since the early 1980s. This has contributed to a sharp deterioration in the level of the current account deficit over the 1980s and 1990s.
- Although the balance of trade was usually positive until the early 1980s, it has frequently been in deficit during during much of the 1980s and 1990s. Australia has run a deficit on services balances over the entire period. When added to the deficit on the income balance, the general deterioration on the goods and services balance also helps to account for the rapid increase in the level of the current account deficit since the late 1970s. This has been particularly pronounced in the late 1990s.

Asian FOCUS

SERVICES AS A COMPONENT OF NATIONAL OUTPUT

The role of services in most economies is becoming increasingly important. The growth in the service sector's share of GDP is a feature of the move in the world economy into the information era—often referred to as the information economy. The service sector's share of GDP is also sometimes used as an indicator of the level of economic development of the economy. This suggests that the level of economic development does indeed vary widely across our region.

Country	Services value added as per cent of GDP, 1997
Australia	71
China, mainland	32
China, Hong Kong SAR	84
India	45
Indonesia	41
Japan	60
Malaysia	41
Singapore	65
Thailand	49

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. Based on the data provided, which countries might be considered to be the most economically developed in the region? Rank each country according to the share of services sector value added in GDP.
2. Using the GNP data from Asian Focus in Chapter 4, is your answer to question 1 consistent with the relative levels of income per capita observed in each of these countries? Rank each of these countries according to income per capita. Which countries stand out as not matching your conclusions to question 1?
3. Why might the service sector's share of GDP not provide a good indicator of the economic development of a country? Discuss.

Global SNAPSHOT — VARIATIONS IN MACROECONOMIC PERFORMANCE

Australia's macroeconomic performance over the last half of the 1990s cannot be considered in isolation. Rather, it needs to be examined on a comparative basis to determine the 'success' or otherwise of Australia in improving the economic welfare of its citizens.

Country or region	Average annual rate 1994–95 to 1998–99 Change in real GDP	Change in CPI	Unemployment
United States	3.7	2.4	5.1
Japan	1.4	0.4	3.6
Euro area	2.1	1.7	11.2
Germany	1.5	1.3	10.5
South Korea	5.1	4.3	3.6
Taiwan	6.2	1.9	2.4
China, Hong Kong SAR	2.1	4.2	3.4
New Zealand	2.2	1.8	6.8
Singapore	6.5	1.0	2.4
Australia	*4.4*	*1.9*	*8.38*

SOURCE: Reserve Bank of Australia, Bulletin, *March 2000.*

Questions

1. For each of the macroeconomic variables listed, rank each country/region from first to tenth.
2. How does Australia rank with respect to change in real GDP? How does Australia rank with respect to change in CPI and in its unemployment rate?
3. By weighting each variable equally, determine the average ranking of each country/region. Has Australia had relatively good macroeconomic performance? Explain.

NATIONAL SAVINGS

Our discussion of the current account deficit leaves us with the impression that Australia has been and is still a significant borrower internationally; that is, that we have not saved sufficiently to fund our own consumption and investment activities. This would be an accurate conclusion, but partly reflects the fact that Australia is a rapidly growing and developing economy. Thus it has been reliant on foreign financial capital to assist it to fund some of this development.

So what are **national savings**? Where do they come from? Who does the saving in the Australian economy? We will now briefly answer each of these questions in turn.

National savings represent the saving from national income that is used to finance gross fixed capital formation. It thus represents the excess of income over expenditures of the income-earning groups in the economy. These groups are households, businesses and government. When we discuss national savings, we are therefore discussing the saving of the household, business and government sectors.

Figure 5.8 shows the path of net savings as a share of GDP for the different groups in the economy over the 1972–73 to 1998–99 period and in total.

A disturbing feature noted by many commentators over time is the decline observed in the net household saving rate over the period. This is particularly so in the late 1990s with the increases in consumer-debt interest that households have taken onto themselves.

Is this a problem? If so, what are the possible solutions? Recent innovations such as compulsory superannuation and the introduction of consumption taxes in the form of the goods and services tax (GST) are being applied to assist in solving this perceived problem. Superannuation acts as a form of enforced saving. However, there is some evidence in our graph to suggest that as superannuation has grown throughout the 1990s, other forms of saving by households have shrunk. As to whether the GST will encourage saving at the cost of consumption is yet to be determined.

The fact that the business sector has become a stronger net saver over the 1990s has helped to compensate for some of the fall in household savings. We also need to remember that households are the ultimate owners of business through their investments, and so an increase in company saving provides an increase in the wealth of the household sector. Indeed, this increase in wealth may be fuelling consumption and discouraging, or reducing the incentive to engage in, saving by households.

A final point on the information contained in Figure 5.8. Government has traditionally been a net borrower in Australia—a dissaver. However, due to the tightening of fiscal policy over the 1990s, the sale of publicly held assets and the recovery of the late 1990s, it too has moved to be a net saver. In fact, we may note that it is the improvement in the government's budget deficit positions throughout the late 1990s that has been a key factor in increasing the total saving rate for Australia.

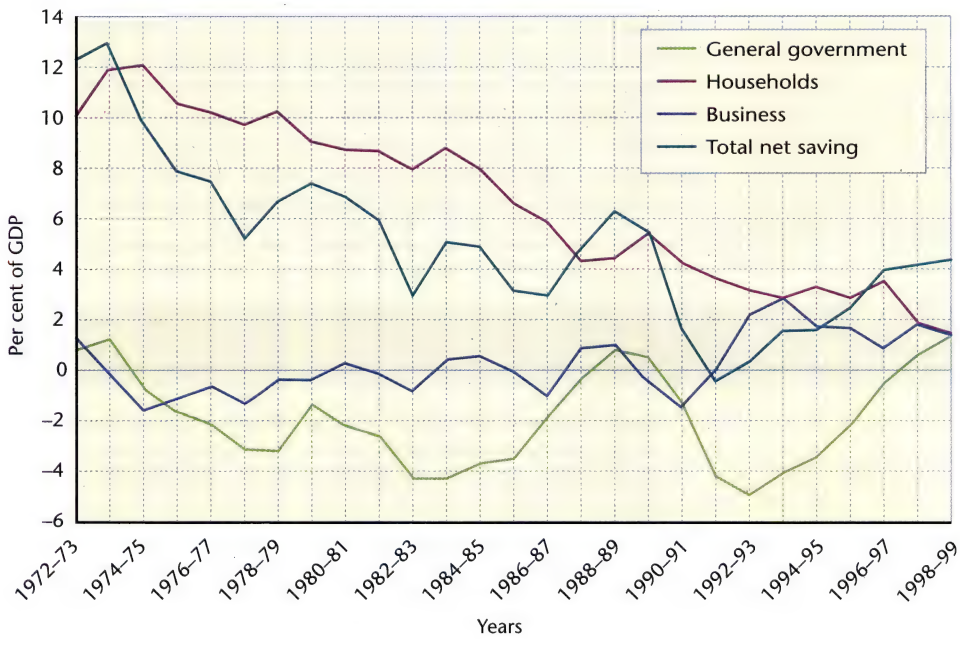


FIGURE 5.8
National savings, 1972–73 to 1998–99

Australia's rate of national savings has declined sharply over the last two and a half decades, although it has improved in the 1990s. Of concern to many has been the decline in the rate of household saving. This has been compensated for by increases in the savings of business and government over recent years.

SOURCE: Australian Bureau of Statistics, National Accounts: National Capital Account, *ABS Cat. No. 5206.*

Concept highlights

- National savings represent the saving—the excess of incomes over expenditures—from national income. National savings are used to finance gross fixed capital formation.
- The groups that contribute to national saving are households, business and government. While business and government have increased their saving rates over the last decade, there has been a nearly continuous fall in the household saving rate.

Business IMPLICATION

CAN WE TRADE OUR WAY OUT OF THIS?

The level of the current account deficit relative to GDP, a focal point of economic policy in the 1980s, has again become a major issue at the end of the 1990s and the beginning of the 2000s. The deficit on the income balance component of the current account balance has continued to increase in importance. Can we trade our way out of a problem that largely reflects our repayment of debt, interest payments on that debt, and the payment of dividends to foreign investors?

The answer will lie in the degree to which we can improve the goods and services balance of the current account. If we have used our borrowed funds to invest in assets that have increased our productivity, that produce output for export or that produce output which replaces imports, then we should see a gradual improvement. This should provide income with which to repay the debts we have accumulated. If we have not achieved these outcomes, then what? We can, primarily, expect a gradual (or not so gradual) weakening of the Australian dollar against the major currencies. Although this will improve the competitiveness of Australian-produced goods and services relative to those produced in other nations, there are some potential adverse consequences and policy responses. Interest rates will be raised by the Reserve Bank of Australia to support the currency and to reduce inflationary pressures reflecting increases in the price of imported goods. Businesses will need to be prepared to operate in a high-interest-rate environment, in which their products are potentially very competitive internationally. An interesting combination.

SUMMARY

1 Our economy has been characterised by fluctuations in domestic output, employment and the price level; that is, Australia's economic history displays clear evidence of the presence of a business cycle. Although characterised by common phases—peak, recession, trough, recovery—business cycles in Australia have varied greatly in both duration and intensity.

2 Although the business cycle has been explained in terms of such ultimate causal factors as technological innovations, political events and monetary policy or money creation, it is generally agreed that the level of aggregate demand is the immediate determinant of domestic output and employment. Thus instability in aggregate demand is the key source of economic instability over the shorter term.

3 All sectors of the economy are affected by the business cycle, but in varying ways and degrees. The cycle has greater output and employment ramifications in the capital goods and durable consumer goods industries than it does in the non-durable goods industries. Additionally, price fluctuations are greater in competitive industries than in monopolistic industries over the cycle.

4 In discussing unemployment we commonly distinguish between frictional, structural and cyclical unemployment. Frictional unemployment is present as a natural consequence of the movement of workers between occupations. Structural unemployment reflects mismatches in both skills and geographical locations between the unemployed and the vacancies available. Cyclical unemployment, or demand-deficient unemployment, is associated with inadequate levels of expenditures within the economy.

5 We measure unemployment by the unemployment rate. The unemployment rate represents the percentage of the labour force defined as unemployed. Accurate measurement of unemployment is complicated by the existence of part-time and discouraged workers. Some economists specify a full-employment rate of unemployment, or natural rate of unemployment, as low as 2 or 3 per cent, while others consider it to be as high as 6 or 7 per cent.

6 The economic cost of unemployment is measured by the GDP gap. This consists of the value of goods and services that society forgoes when some of its resources are involuntarily idle. Unemployment is also conducive to a deterioration of national morale as a result of the psychological impact it has, and to social and political unrest due to the large differences in income and opportunities that it implies.

7 Inflation is measured as the percentage increase in the level of a price index from period to period. Usually this price index is based on a representative basket of goods and services consumed by the average household. In Australia, the price index usually referred to is the consumer price index (CPI).

8 Inflation may have various causes, as is suggested by the demand-pull, cost-push and structural theories of inflation. The demand-pull theory suggests that some inflation may be necessary if the economy is to realise high levels of output and employment. However, the cost-push theory indicates that inflation may be accompanied by declines in real output and employment.

9 Unanticipated inflation tends to redistribute income arbitrarily at the expense of fixed-income receivers, creditors and savers. If inflation is anticipated, individuals and businesses may take steps to mitigate its adverse effects.

10 Hyperinflation, which is usually associated with injudicious increases in the money supply (the printing of money by government to fund its expenditures), could undermine the monetary system and precipitate economic collapse.

11 Under a system of floating exchange rates the balance of payments does, by definition, always balance. Therefore a discussion of the implications of the balance of payments must be done in terms of its constituent components. For Australia, the most important of these components is the current account balance. Deficits/surpluses in the current account balance are reflected in surpluses/deficits on the capital and financial account, and an increase in the net level of foreign debt owned by Australians.

12 Australia has traditionally relied on foreign capital in the form of direct and portfolio investment to fund increases in its stock of capital. A continued reliance on foreign investment has seen a rapid deterioration in the level of the income balance and large deficits in this account since the early 1980s. This has contributed to a sharp deterioration in the level of the current account balance over the 1980s and 1990s.

13 Although the balance of trade was usually positive until the early 1980s, it has frequently been in deficit for much of the 1980s and 1990s. Australia has run a deficit on services balances over the entire period. When added to the deficit on the income balance, the general deterioration on the goods and services balance also helps to account for the rapid increase in the level of the current account deficit since the late 1970s. This has been particularly pronounced in the late 1990s.

14 National savings represent the saving—the excess of incomes over expenditures—from national income. National savings are used to finance gross fixed capital formation. Movements in the level of national savings reflect the current account deficit. The groups that contribute to national saving are households, business and government. While business and government have increased their saving rates over the last decade, there has been a near continuous fall in the household saving rate. This may be explained partly by increases in household wealth, which have allowed heavier borrowings by households, and by some replacement of direct saving with alternatives such as superannuation.

KEY TERMS *and* CONCEPTS *to remember*



anticipated versus unanticipated inflation 163
business cycle 148
cost-push inflation 162
current account deficit 170
cyclical peak, recession, trough and recovery 148–149
demand-pull inflation 161
depression 148
direct and portfolio foreign investment 172
discouraged workers 156
frictional, structural, and cyclical unemployment 152–153
full employment 152
GDP gap 157
hidden unemployed 156
hyperinflation 168
macroeconomic stability 146
national savings 174
natural rate of unemployment 153
nominal (or money) income and real income 163
nominal and real interest rates 165
Okun's Law 158
participation rate 156
potential output 153
rule of 70 160
seasonal variations in business activity 150
secular trend 150
supply-side shocks 162
terms of trade 170
underemployed 156
wage–price inflationary spiral 168
wage-push and profit-push inflation 162

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1. What are the major phases of the business cycle? How long do business cycles last? How do seasonal variations and secular trends complicate measurement of the business cycle?
2. Why does the business cycle affect the durable goods industries more severely than industries producing non-durables?
3. How is the unemployment rate calculated? Discuss each of the measures required for its calculation. Are there problems with the definition of any of these measures that may lead us to underestimate the unemployment rate? Explain.
4. Why is it difficult to determine the full-employment rate of unemployment? Explain.
5. Why is it difficult to distinguish between frictional, structural and cyclical unemployment?
6. Why is unemployment an economic problem? What are the consequences of the 'GDP gap'?
7. What are the non-economic effects of unemployment?
8. Given that there exists an unemployment compensation program that provides income for those who are out of work, why should we worry about unemployment?
9. Explain how an increase in your nominal income and a decrease in your real income might occur simultaneously.
10. How do we measure inflation? Which price index forms the basis for the measurement of inflation in Australia?
11. Explain how a severe 'hyperinflation' might lead to a depression.
12. A noted television comedian once defined inflation as follows: 'Inflation? That means your money today won't buy as much as it would have during the depression when you didn't have any.' Is this definition accurate?
13. Who loses from inflation? Who loses from unemployment? Describe each of these groups carefully.
14. Explain how an ongoing surplus on the financial account may lead to a substantial deterioration in the current account balance. Through what component of the current account will this be shown? Is such a deterioration inevitable?
15. What has been the pattern in Australia's current account balance over the last two decades? What is the primary factor driving the level of the current account deficit?
16. What are national savings? Which groups contribute to these savings? What is the possible link between national savings and the current account balance?

Problems & exercises

1 Carefully describe the relationship between total spending and the levels of output and employment. Explain the relationship between the price level and increases in total spending as the economy moves from substantial unemployment to moderate unemployment and, finally, to full employment. Use diagrams to support your explanation.

2 Evaluate as accurately as you can the manner in which each of the following individuals would be affected by fairly rapid inflation:

(a) a pensioned railway worker

(b) a department-store assistant

(c) a car assembly-line worker

(d) a heavily indebted farmer

(e) a retired businessperson whose entire current income is from interest on government bonds

(f) the owner of an independent corner shop.

3 Explain and illustrate:

(a) 'Policies that stimulate the domestic economy tend to cause a balance of trade deficit.'

(b) 'A deficit on the current account balance will impose severe constraints upon domestic economic policies.'

Application & analysis

1 What are the latest figures for unemployment and the unemployment rate, the growth of GDP, the inflation rate, the level of the current account deficit and its ratio to GDP? To find out, visit the ABS website at:
http://www.abs.gov.au/

2 Based on your analysis of the data, where would you place Australia in the business cycle? Explain your reasoning. Are there any apparent contradictions between the data and your assessment of the state of the economy? Discuss.

3 What has been happening to the level of retail sales and the sales of consumer durables such as passenger automobiles recently? Again, you can get summary information from the ABS website. Are the results what you would expect from your analysis in question 1 above? What other factors might be influencing these variables? Explain.

4 If you had to choose between (a) full employment with a 6 per cent annual rate of inflation and (b) price stability with an 8 per cent unemployment rate, which would you elect? Why? What is the apparent choice of government at the present? Explain, using examples from recent economic policy decisions.

NOTES

1 The employed are persons aged 15 years and over who, during the reference week of the labour force survey (a) worked for one hour or more for pay, profit, commission or payment in kind in a job or business or on a farm; (b) worked for one hour or more without pay in a family business or on a farm; (c) were employees on paid leave or leave without pay or had been stood down for less than four weeks up to the end of the reference week of the survey, were on strike or locked out, on workers' compensation and expected to return to their jobs, or receiving wages or salary while undertaking full-time study; (d) were employers, self-employed persons or unpaid family helpers who had a job, business or farm, but were not at work.

2 The unemployed are persons aged 15 years and over who were not classed as employed during the reference week of the labour force survey and (1) had actively looked for full-time or part-time work at any time in the four weeks up to the end of the reference week and were available for work in the reference week, or would have been except for temporary illness, or were waiting to start a new job within four weeks from the end of the reference week and would have started during the reference week if the job had been available then; or (2) were waiting to be called back to a full-time or part-time job from which they had been stood down without pay for less than four weeks up to the end of the reference week.

3 This estimate relies on the estimates of Martin Watts and William Mitchell, 'Alleged Instability of the Okun's Law Relationship in Australia: An Empirical Analysis', *Applied Economics*, 1991, vol. 23. It is higher than that suggested in some previous studies. As a result, the unemployment gap ratio should be interpreted with caution, being purely indicative of economic loss to the economy.

4 Premier's statement, 1930. Quoted in J. T. Lang, *The Great Bust*, Angus and Robertson, Sydney, 1962, p. 258.

5 ibid., p. 207.

6 S. Greig Smith, Secretary, Charity Organisation Society, in the Melbourne *Argus*, 7 March 1931. Quoted in J. L. Louis and I. Turner, *The Depression of the Thirties*, Cassell, Melbourne, 1968, p. 117.

7 Range 2 of Figure 5.5 will reappear in the slightly altered form of the Phillips curve in Chapter 14. There we will explore some of the controversy surrounding its shape, its location and even its existence.

8 The distinction between nominal and real GDP in Chapter 4 is pertinent, and you may want to review the 'inflating' and 'deflating' process involved in converting money GDP to real GDP.

9 A more precise calculation follows the process given in Chapter 4 for changing money GDP to real GDP; hence:

$$\text{real income} = \frac{\text{money income}}{\text{price index (as a decimal)}}$$

Thus, in our first illustration, if your money income rises by 10 per cent from \$100 to \$110 and the price level (index) increases by 5 per cent from 100 to 105, then real income has increased as follows:

$$\frac{\$110}{1.05} = \$104.76$$

The 5 per cent increase in real income shown by the simple formula in the text is clearly a very good approximation of the 4.76 per cent yielded by our more complex formula.

10 See G. L. Bach, 'Inflation: Who Gains and Who Loses?', *Challenge*, July–August 1974, p. 48.

11 Theodore Morgan, *Income and Employment*, 2nd edn, Prentice-Hall Inc., Englewood Cliffs, NJ, 1952, p. 361.

12 Raburn M. Williams, *Inflation! Money, Jobs and Politicians*, AHM Publishing Corporation, Arlington Heights, Ill., 1980, p. 2.

A LAST WORD WHAT'S PROGRESS?

As we consider the value of the alternative measures of GDP that we use to measure market activity, we should be aware of both the purposes for which these measures are designed, and their inherent limitations. Perhaps, at a more philosophical level, we should be questioning whether and what we gain by striving to increase the market value of output as represented by the value of GDP. What, indeed, is progress in the human condition, and will maximising GDP ensure that we achieve it?

In modern times, faith in progress has been closely connected to, if not wholly identified with, the inevitability of market-driven economic growth. Is this an error?

What's progress?

If stockmarkets are any guide, this is a time of extraordinary economic optimism in the West, and in the United States in particular. Much of the excitement is due to a surge of enthusiasm concerning the power of technology: many believe that the Internet and its related innovations will bring in a new Industrial Revolution, and that long-term growth may already be accelerating to rates last seen in the golden age of the 1950s and early 1960s. But these moods come and go. It is only a year or two since new books about America's inevitable economic doom outnumbered by about ten to one new books about its unlimited economic potential; lately this ratio has been inverted, then squared.

It is salutary to see such fluctuations put in historical context. One of the best things about *Progress and the Invisible Hand* by Richard Bronk, a City economist and part-time academic, is that it charts the history of the notion of progress back to classical times (the author is a classicist and philosopher too). For centuries mankind was equivocal about the idea. Seeking after knowledge and striving to achieve higher levels of civilisation are recurring themes. But rapid and sustained material (as opposed to intellectual or cultural) progress, sufficient to be perceived within the span of a single lifetime, is a comparatively recent phenomenon. Up until the middle of the 1700s there was no strong presumption of progress in this characteristically modern sense. Indeed many classical and early modern thinkers speculated that their own societies had attained a summit, and that without virtuous conduct of one kind or another they would slide back down.

For roughly the past two centuries, material progress, measured both in physical output and in the staggering growth of population (indicating relief of want on a hitherto unimagined scale) has become almost boringly familiar across much of the world. Not coincidentally, the early stages of this shift in possibilities happened alongside the philosophical movement of the Enlightenment, which (among other things) sought to advance the claims of reason and science on human action. Man would be set free from the past; for the first time, the future offered unlimited possibilities. By 1780 Benjamin Franklin was able to write: 'It is impossible to imagine the height to which may be carried, in a thousand years, the power of man over matter.'

Mr Bronk next asks whether faith in progress, and specifically in market-driven material progress, is as well-grounded now as it was in the 18th century. He thinks not. His reason is not that life-transforming innovation is drying up (though, the Internet notwithstanding, you could make a case along those lines); it is that, in the West at least, economic growth has ever less to do with human advance, adequately defined, and that in many respects the one is becoming inimical to the other.

This is well-trodden ground, but Mr Bronk makes his case more persuasively and much more elegantly than his predecessors. A great deal of what he says is right, and deserves to be noted as a proper check on capitalist triumphalism. In many ways the connection between growth and wellbeing in the West is indeed more tenuous now than it was even a few decades ago. Mr Bronk ably reviews the factors that drive a wedge between the two—externalities such as pollution and congestion, market failures of other kinds, the 'social limits to growth' (as people compete increasingly for status, which is in fixed supply), the demonstrated fact that income is not well correlated with happiness, and so on. All these pose challenges to the fatuous techno-optimism that is currently, maybe only briefly, in vogue.

Where Mr Bronk goes wrong is to indict liberalism ('free-market' economics) as the ideology that underpins this veneration of the false god, GDP. There are in fact two (main) liberalisms. One, discussed at length by Mr Bronk, comes from an alliance of utilitarianism and Adam Smith. Mr Bronk says that utilitarianism (the idea that society should aim to achieve the greatest good of the greatest number) supplied Smith (who explained the market system) with moral content. But in fact the Utopian, rights-suppressing, economic-engineering tendencies in utilitarianism come down to contemporary thought most directly as leftism: liberalism in the American sense, you might say, not the 'free-market' liberalism Mr Bronk takes a bead on.

The 'free-market' school of liberalism, falsely accused by Mr Bronk, is animated not by certainty about how to arrange the distribution of income (or about anything much, for that matter) but by regard for individual liberty and by scepticism. Liberty calls for markets because it requires, so far as possible, freedom from coercion: markets are places where people do things voluntarily. Scepticism calls for markets because a million experiments are safer than one big plan handed down by the Chief Engineer: markets weed out mistakes rather than entrenching them; their solutions to economic problems are always provisional, always adapting.

Liberty and scepticism come together in ruling out the idea that society should have any such goal as maximising GDP. The 'free-market' liberal is not so presumptuous. Some people want to maximise their incomes in the market; others want to balance that goal against different aims; still others have no interest whatever in maximising their income, and want to pursue their own idea of the good life in their own way. Collectivist politicians, of 'left' and 'right' alike, do indeed prate on about what the global market requires if Britain PLC or America Inc is to prosper in the world. The Tony Blairs and Bill Clintons of this world do equate national income with national wellbeing. But then they are not 'free-market' liberals.

SOURCE: Economist, *31 July 1999.*

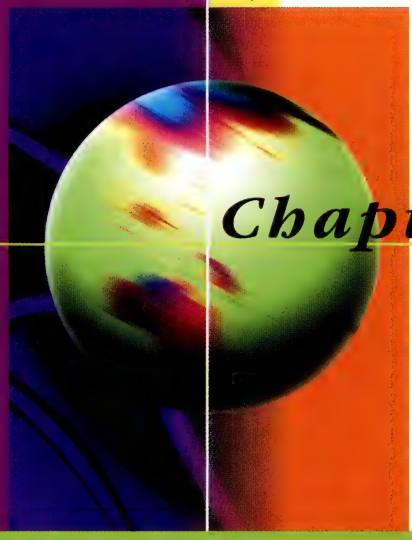
Questions

1 What does the article suggest is missing in the use of GDP growth as a measure of human progress?

2 Are the fast rates of economic growth seen over the last two centuries typical of human experience?

3 What factors are suggested as driving a wedge between human progress and GDP growth? Explain how these might affect the 'true' value of GDP.

4 In what ways does the critique of GDP outlined in this article differ from the type of critique of GDP discussed in Last Word in Chapter 4? Discuss the nature of these differences and the implications they have for our interpretation and use of GDP as a measure of economic welfare and a basis for the assessment of economic progress.



Chapter 6 THE AGGREGATE EXPENDITURES MODEL

INTRODUCTION

The message of Chapter 5 was that our economy has been characterised by substantial and costly macroeconomic instability. Real GDP—and therefore employment—has fluctuated considerably. Sometimes we have faced recession, reflecting the fact that spending has frequently been insufficient to purchase all of the output—goods and services—made available; incomes have fallen while the unemployment rate has increased. At other times the demand for output has grown strongly; we have entered a boom period, with the resultant rise in incomes and fall in the unemployment rate.

The purpose of this chapter and the next is to introduce some basic analytical tools that will provide us with a means of organising our thinking about the business cycle. We will be moving from the simple description of macroeconomic instability in Chapter 5, towards an analysis of the fundamental causes of the fluctuations that we have observed in our aggregate measures of real output, incomes and employment (see Chapter 4). To this end, we will build a model of the determinants of the level of real GDP, based upon the level of total spending in the economy, comprised of consumption, investment, government and net export expenditures—the aggregate expenditures model. This will yield a preliminary understanding of how macroeconomic instability might arise—through changes in the level of some components of total spending and, therefore, its level.

LEARNING OBJECTIVES

- **Describe the assumptions underlying the aggregate expenditures model.**
- **Briefly outline the different motivations of savers and investors.**
- **Explain the consumption–income and saving–income relationships upon which the aggregate expenditures model is based.**
- **Examine the determinants of the level of investment—firm's purchases of capital equipment.**
- **Combine our concepts of consumption, saving and investment to produce a model of the equilibrium level of output and income for a private (no government), closed (no foreign sector) economy.**
- **Apply our model to a discussion of the paradox of thrift.**

Note that our focus is on deriving a model to help us understand the basic determinants of the levels of output and employment. The numbers that we will use in this chapter, and in Chapter 7, are not intended to measure actual real or nominal GDP. Additionally, while the aggregate expenditures model provides us with a set of valuable insights into the behaviour of the macroeconomy, it will *usually* be assumed that the price level is a constant. In Chapter 8 we will develop a model that complements the aggregate expenditures model—the aggregate demand (AD) – aggregate supply (AS) model, in which both prices and real GDP can change.

THE DEVELOPMENT OF THE AGGREGATE EXPENDITURES MODEL

The aggregate expenditures model—by this and other names—has a distinguished history in macroeconomics. It will, in fact, have been the first macroeconomics model taught to and learnt by many of your lecturers and tutors. Its development parallels a number of important elements in the history of economics. In particular, we can link it to the development of the national accounting framework, with which you are familiar from Chapter 4, and the Great Depression of the 1930s. It was this latter event which led to John Maynard Keynes's attack the classical orthodoxy that existed in economics at the time (see Chapter 13), and his development of ideas that focused on the role of demand in determining the equilibrium levels of output and employment in the economy.

We can think of the aggregate expenditures model in a number of ways: either as a model of recession economics, or as a model suited to the analysis of low-inflation economies. The model also provides an excellent conceptual tool with which to analyse the interaction of the various aggregates from the national accounts discussed in Chapter 4. It is also a model within which to analyse the impact of changes in these aggregates bought about by shifts in government policy—particularly fiscal policy—in a language that is widely used and understood in the media.

SIMPLIFYING ASSUMPTIONS

Closed economy assumption: the assumption that both the product and financial markets of the economy are fully isolated from the rest of the world.

Private economy assumption: the assumption that there is no explicit contribution by government to either the product or financial markets.

Price–wage inflexibility: the assumption that all prices, including wages and interest rates, are inflexible, especially over the short term, and do not adjust to remove disequilibria over this period.

A number of simplifying assumptions will help us to build the aggregate expenditures model.

1. Initially a **'closed economy'** will be assumed; that is, our discussion will deal with the domestic economy, deferring the complications arising from international trade transactions until Chapter 7.
2. Government will be ignored until Chapter 7, permitting us to demonstrate that laissez-faire capitalism may not achieve and maintain full employment. Thus we will initially analyse a **'private'** closed **economy**.
3. Although saving actually occurs in both the business and household sectors of the economy, we will speak as if all saving were personal savings. We will also assume that saving by households is based purely upon their income levels.
4. For simplicity, we will assume that *depreciation* and *net* Australian *income* earned abroad are zero (on these measures see Chapters 4 and 5).
5. Just as we have assumed that households make the saving decisions in the economy, we will assume that all investment decisions are made by business.
6. Additionally, we will assume that investment is influenced only by real interest rates.

We will, for the greater part, assume that all prices, including wages, are fixed over the time frame of our analysis; that is, **price–wage inflexibility** exists.

IMPLICATIONS AND JUSTIFICATION

The implications of these assumptions are noteworthy. First, we found in Chapter 4 that there are four components of aggregate spending: consumption, investment, government purchases, and net exports. Our assumptions 1 and 2 mean that, for the moment, we are concerned only with the consumption and investment components of aggregate spending.

Second, assumptions 2 to 4 permit us to treat gross domestic product (GDP), national income (NI), household income (HI), and household disposable income (DI) as being equal. All the items that in practice distinguish them from one another are due to depreciation, net Australian income earned abroad, government (taxes and transfer payments) and business saving. This means that if $401 billion worth of goods and services is produced as GDP, we assume that exactly $401 billion worth of disposable income is received by households to split between consumption expenditure and saving.

Third, assumptions 3 and 5 together ensure that we treat savers and investors as different groups within our model. Is this a fair assumption? Who decides the amounts to be saved and invested in a capitalistic economy?

Business organisations of all kinds, in particular companies, make the vast majority of investment decisions. The motivation for investment spending, as we shall discover, is complex. The rate of profit that business firms expect to realise

on the investment is the really crucial determinant of the amounts they desire to invest. However, the interest rate—the cost of obtaining financial capital with which to invest—is undoubtedly a consideration in formulating investment plans.

And who makes the saving decisions? Here the picture is more complex. In a wealthy economy such as Australia, households save substantial amounts—at least when prosperity prevails. Saving decisions are motivated by diverse considerations. Some save to make large purchases that exceed any single pay cheque, for example colour television sets and down payments on houses and cars. Some saving is solely for the convenience of having liquid funds that are readily available to take advantage of any extraordinarily good buys that may be offered. Saving may occur to provide for the future needs of an individual's family, for example to provide for the future retirement of the family breadwinner(s). Saving may be a precautionary, rainy-day measure—a means of protection against such unpredictable events as prolonged illness and unemployment. Saving may be merely a deeply ingrained habit that is practised on an almost automatic basis with no specific purposes in mind. Much saving is highly institutionalised or contractual, for example payments for life insurance, superannuation and annuities. The basic point is that none of these diverse motives for saving is particularly sensitive to the interest rate; the primary determinant of both saving and consumption is the level of GDP—incomes.

It is also true that companies do a considerable amount of saving in the form of undistributed profits. However, it is important to note that to a significant degree saving and investment decisions are made by different groups of individuals and are based on different considerations. We can thus justify the assumption that each of the groups making the decisions is separate.

Finally, assumption 6 means that we are dealing with a model of the short run, that is, a period over which there is considerable stickiness in prices of all types. This means that prices and wages will not always adjust across markets to ensure that we achieve full employment of all resources (see Chapter 2). We will, as we shall discover later, find that the economy is able to achieve equilibrium in output and employment at below the full-employment level. Indeed we will find that even if prices and wages were completely flexible downwards, this might still be insufficient to ensure full employment, due to the impact of wage and price reductions on income and hence on expenditures.

Is the assumption of sticky wages and prices a reasonable one? The price system of modern capitalism is not perfectly competitive; rather, it is riddled by market imperfections and circumscribed by practical and political obstacles that work against downward price–wage flexibility. Monopolistic producers, dominating many important product markets, have both the ability and the desire to resist falls in product prices as demand declines. The costs of widespread price changes—**menu costs**—also discourage firms from making continual adjustments to prices in many markets, leading to lumpiness and considerable delays in price changes. In some resource markets, strong labour unions are equally persistent in holding the line against wage cuts. In this endeavour they are ably assisted by minimum-wage legislation, public opinion about what are reasonable and 'customary' wage rates, and practical-minded politicians who are well aware of the power of labour at the polls.

Furthermore, some employers are wary of the idea of cutting wages, recognising the adverse effects that this could have on worker morale and productivity. Others have enterprise agreements in place that may prescribe wages and conditions for one or more years to come. In short, as a practical matter, downward price–wage flexibility cannot be assumed as a normal feature of our capitalist economy, especially over the short-to-medium term.

Concept highlights

The following are simplifying assumptions of the aggregate expenditures model:

- The initial discussion deals with the domestic economy only; that is, a 'closed economy'—one with no international trade transactions—is assumed.
- The explicit presence and impact of government are initially ignored; that is, a 'private' closed economy operating under laissez-faire capitalism is assumed.
- All saving is assumed to be personal savings, with households basing their desired levels of saving purely upon their income levels.
- Depreciation and net Australian income earned abroad are assumed to be zero.
- All investment decisions are assumed to be business decisions, with the planned level of investment being influenced only by real interest rates.
- Prices, including wages, are generally assumed to be fixed over the time frame of the analysis; that is, price–wage inflexibility exists as a feature of the economy.

TOOLS OF THE AGGREGATE EXPENDITURES THEORY

Aggregate expenditures: the sum of expenditures on consumption (*C*), investment (*I*), government purchases (*G*), and net exports (*NX*).

How are the levels of output and employment determined in modern capitalism? The amount of goods and services produced, and therefore the level of employment, depend directly upon the level of total or **aggregate expenditures**. Subject to the economy's productive potential as determined by the scarce resources available to it, businesses will produce that level of output that they can profitably sell. Labour and machinery are left idle when there are no markets for the goods and service they are capable of producing. Total output and employment vary directly with aggregate expenditures.

Aggregate expenditures can best be understood in terms of the four components of GDP discussed in Chapter 4—consumption (*C*), investment (*I*), government purchases (*G*), and net exports (*NX*). Our plan of attack is to analyse the consumption and investment components of aggregate expenditures in the remainder of this chapter, to derive a private sector model of equilibrium levels of real GDP and employment. Chapter 7 will add government expenditures (along with taxes) and net exports to the model, and discuss the multiplier process.

Be sure that you understand as we begin our discussion that unless specified otherwise, we assume that the economy has a substantial amount of excess productive capacity and unemployed labour. An increase in aggregate expenditures will increase real output and employment but, by assumption, *not* the price level.

CONSUMPTION AND SAVING

In terms of absolute size, consumption is the main component of total spending, constituting about 59 per cent of GDP in 1998–99 (see Chapter 4). It is therefore of obvious importance to understand the major determinants of consumption spending. You will recall from Chapters 4 and 5 that economists define saving as 'not spending' or 'that part of income that is not consumed'. In other words, disposable income equals consumption plus saving. Hence, in examining the determinants of consumption we are also simultaneously exploring the determinants of saving.

INCOME–CONSUMPTION AND INCOME–SAVING RELATIONSHIPS

There are many considerations that influence the level of consumer spending. But common sense and available statistical data both suggest that the most important determinant of consumer spending is income, in particular household disposable income. And, of course, since saving is that part of disposable income that is not consumed, DI is also the basic determinant of personal saving.

Consider some recent historical data. In Figure 6.1 each dot indicates the consumption – disposable income relationship for each year since 1959–60, and the *C* line is fitted to these points. Note, most obviously, that consumption is directly related to disposable income and, indeed, households clearly spend most of their income. But we can say more. The 45-degree line is added to the diagram as a point of reference. Because this line bisects the 90-degree angle formed by the vertical and horizontal axes of the graph, each point on the 45-degree line must be equidistant from the two from any point on the horizontal axis to the 45-degree line as either consumption or disposable income. If we regard it as disposable income, then the amount (the vertical distance) by which the actual amount consumed in any given year falls short of the 45-degree guideline indicates the amount of saving in any particular year. For example, in 1989–90 consumption was $215 157 million, and household disposable income was $232 276 million; hence, household saving in 1989–90 was $17 119 million; that is, disposable income less consumption equals saving. By observing these vertical distances as we move to the right on Figure 6.1, we note that saving also increases, as does the level of disposable income.

Note that what is not shown in Figure 6.1 is the fact that in years of very low income—for example, some of the worst years of a depression—consumption may exceed disposable income. The dots for these years would obviously be located above the 45-degree line. Households actually consumed in excess of their current incomes by dissaving—that is, by going into debt and liquidating previously accumulated wealth. Thus a line that best fitted the dots would be one with a positive intercept.

To summarise, Figure 6.1 suggests that:

1 Households consume most of their disposable income.

2 Both consumption and saving are directly related to the level of income.

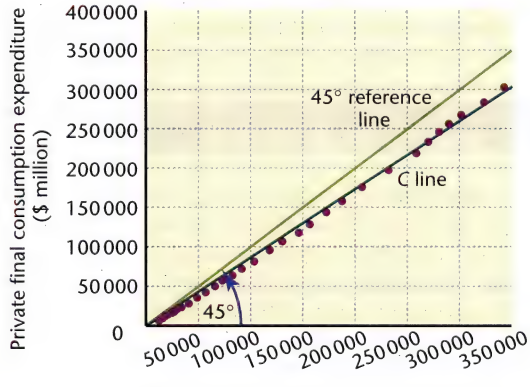


FIGURE 6.1
Consumption and household disposable income, 1959–60 to 1998–99

Each dot in this figure shows consumption and disposable income in a given year. The C line generalises upon the relationship between consumption and household disposable income. It indicates a direct relationship, and that households consume the bulk of their incomes.

SOURCE: 1959–60 to 1994–95, Reserve Bank of Australia, Australian Economic Statistics 1948–49 to 1994–95; *1995–96 to 1998–99, Reserve Bank of Australia,* Bulletin, *various issues.*

Asian FOCUS — SAVINGS RATIOS IN ASIA

The habit of thrift, as represented by the ratio of gross domestic savings to GDP—the savings ratio—is indulged in to very different degrees within our region. The general rule is, however, that thrift is a highly valued characteristic in many of our region's nations.

Country or region	Gross domestic savings 1997 (per cent of GDP)
Australia	21
China, mainland	43
China, Hong Kong SAR	31
India	20
Indonesia	31
Japan	30
Malaysia	44
New Zealand	22
Singapore	51
Thailand	36
Vietnam	21
Low- and middle-income countries in:	
East Asia and Pacific	38
Europe and Central Asia	21
South Asia	18
World	**23**

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. What do you observe about the savings ratio in many Asian countries compared to the savings ratio in Australia and the savings ratio for the world? Is the habit of thrift strongly developed in most nations in our region?
2. What factors may lead to savings ratios being higher in some countries than in others? List some of these factors.
3. Does a high savings ratio indicate that a nation will have sufficient funds to make all the investments required to ensure its development? Why or why not?

Business IMPLICATION — CONSUMPTION AND BORROWING

Where did Australians get much of the money that they have used to finance their holidays and purchases of houses and consumer durables, such as cars, over the late 1990s and into the 2000s? They borrowed it, often at variable interest rates.

Australian households have increased the value of their borrowings relative to their disposable incomes to some of the highest levels seen since after the share market crash of October 1987. What are the implications of this increased borrowing? An increased exposure of households to increases in interest rates! Any increase in interest rates will see the size of households' monthly interest bills soar skyward. The result will be a significant fall in discretionary expenditure—large falls in consumer spending on housing and consumer durables. Watch out for the next big rise in interest rates if you are employed in or have invested in these durable goods industries.

THE CONSUMPTION SCHEDULE

Consumption schedule: a schedule of the income–consumption relationship. The schedule shows the various amounts households plan or intend to consume at various possible levels of disposable income.

Figure 6.1 uses historical data; it shows us how much households actually did consume (and save) at various levels of DI over a period of years; this is a time-series consumption function.

For analytical purposes we need an income–consumption relationship—a **consumption schedule**—that shows the various amounts households plan or intend to consume at various possible levels of disposable income, which might conceivably prevail at some specific point in time. A hypothetical consumption schedule of the type we require for analysis is shown in columns 1 and 2 of Table 6.1. It is plotted in Figure 6.2(a). This consumption schedule reflects the consumption – disposable income relationship suggested by the empirical data underlying Figure 6.1.[1] The relationship is direct; in addition, we note that households will spend a larger proportion of a small disposable income than of a large disposable income.

Table 6.1 Consumption and savings schedules (hypothetical data)

(1) Level of output and income (GDP = DI) $ billion	(2) Consumption C $ billion	(3) Saving S $ billion (1) − (2)	(4) Average propensity to consume (APC) (2) ÷ (1)	(5) Average propensity to save (APS) (3) ÷ (1)	(6) Marginal propensity to consume (MPC) Δ(2) ÷ Δ(1)[a]	(7) Marginal propensity to save (MPS) Δ(3) ÷ Δ(1)[a]
370	375	–5	1.01	–0.01	0.75	0.25
390	390	0	1.00	0.00	0.75	0.25
410	405	5	0.99	0.01	0.75	0.25
430	420	10	0.98	0.02	0.75	0.25
450	435	15	0.97	0.03	0.75	0.25
470	450	20	0.96	0.04	0.75	0.25
490	465	25	0.95	0.05	0.75	0.25
510	480	30	0.94	0.06	0.75	0.25
530	495	35	0.93	0.07	0.75	0.25

a The Greek letter Δ, delta, means 'a change in'.

THE SAVING SCHEDULE

Saving schedule: a schedule of the income–saving relationship. The schedule shows the various amounts households plan or intend to save at various possible levels of disposable income.

It is a simple task to derive a **saving schedule**. Because disposable income equals consumption plus saving, we need only subtract consumption from disposable income to find the amount saved at each level of DI. Hence, columns 1 and 3 of Table 6.1 constitute the saving schedule. This schedule is plotted in Figure 6.2(b).

Note that there is a direct relationship between saving and DI, but that saving constitutes a smaller proportion of a small DI than it does of a large DI. If households consume a smaller and smaller proportion of DI as DI goes up, they must save a larger and larger proportion.

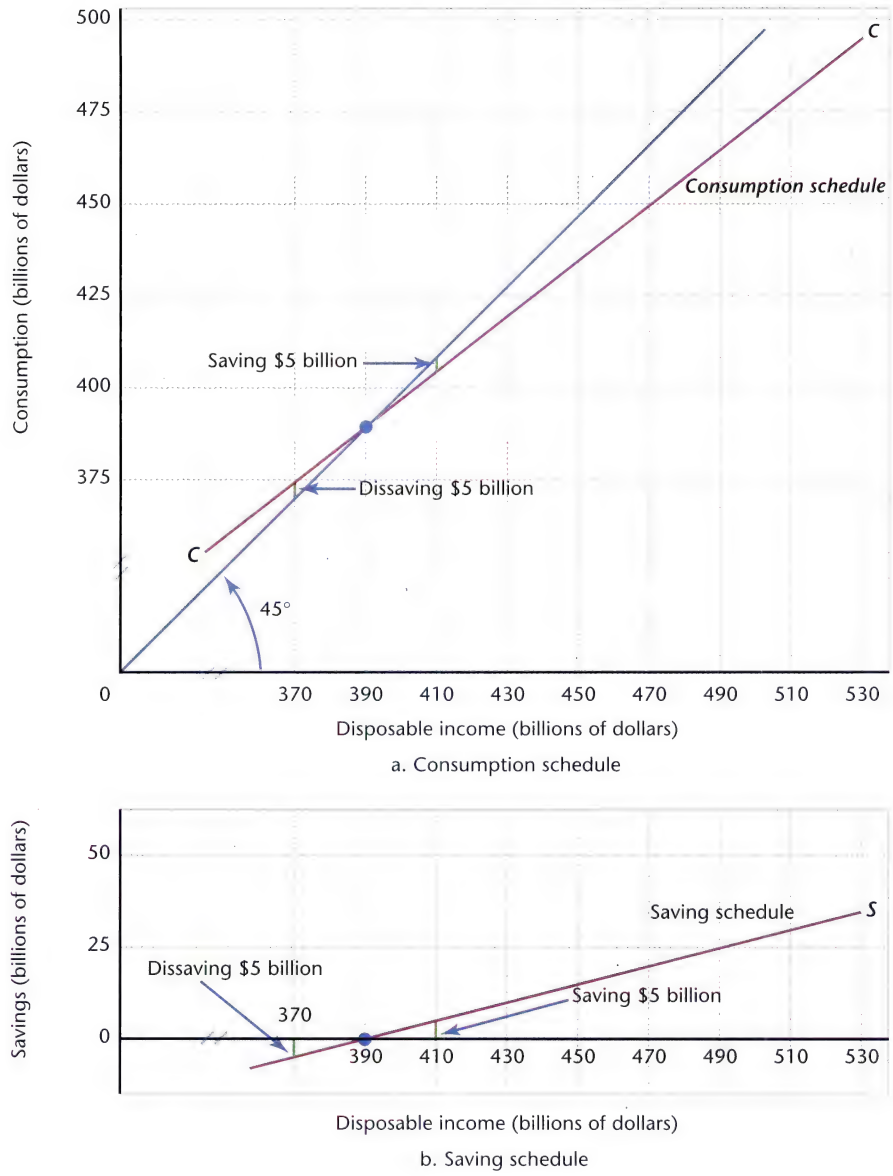


FIGURE 6.2
(a) Consumption schedule and (b) saving schedule

The two parts of this figure show the income–consumption and income–saving relationships graphically. Each point on the 45-degree line in (a) indicates an equality of DI and consumption. Therefore, because saving equals DI minus consumption, the saving schedule in (b) is found by subtracting the consumption schedule vertically from the 45-degree guideline. Consumers 'break even'; that is, consumption equals DI (and saving therefore equals zero) at $390 billion for these hypothetical data.

Break-even income: the level of income at which consumption expenditure exactly equals households' income.

Remembering that each point on the 45-degree line indicates an equality of DI and consumption, we see that dissaving would occur at the relatively low DI of $370 billion; that is, households would consume in excess of their current incomes by drawing down accumulated savings or by borrowing. Graphically, the vertical distance of the consumption schedule above the 45-degree line is equal to the vertical distance of the saving schedule below the horizontal axis at the $370 billion level of output and income, as shown in Figures 6.2(a) and (b). In this instance, each of these two vertical distances measures the $5 billion of dissaving that occurs at the $370 billion income level. At the $390 billion income level, households will 'break even' by consuming their entire incomes. Graphically, the consumption schedule cuts the 45-degree line, and the saving schedule cuts the horizontal axis (saving is zero) at this **break-even income** level. At all higher

incomes, households will plan to save a portion of their income. The vertical distance of the consumption schedule below the 45-degree line measures this saving, as does the vertical distance of the saving schedule above the horizontal axis. For example, at the $410 billion level of income, both these distances indicate $5 billion worth of saving, as shown in Figures 6.2(a) and (b).

AVERAGE AND MARGINAL PROPENSITIES

Columns 4 to 7 of Table 6.1 point to additional characteristics of the consumption and saving schedules.

APC AND APS

Average propensity to consume (APC): the fraction, or percentage, of any given total income that is consumed.

Average propensity to save (APS): the fraction, or percentage, of any total income that is saved.

That fraction, or percentage, of any given total income that is consumed is called the **average propensity to consume (APC)**, and that fraction of any total income that is saved is called the **average propensity to save (APS)**; that is:

$$\text{APC} = \frac{\text{consumption}}{\text{income}}$$

and

$$\text{APS} = \frac{\text{saving}}{\text{income}}$$

Clearly, at any level of DI, the sum of the values of APC and APS must equal one, since:

$$\begin{aligned}\text{APC} + \text{APS} &= \frac{\text{consumption}}{\text{income}} + \frac{\text{saving}}{\text{income}} \\ &= \frac{(\text{consumption} + \text{saving})}{\text{income}} \\ &= \frac{\text{income}}{\text{income}} = 1\end{aligned}$$

For example, at the $470 billion level of income in Table 6.1, the APC is $\frac{45}{47}$, or about 96 per cent, while the APS is obviously $\frac{2}{47}$, or about 4 per cent. By calculating the APC and APS at each of the nine levels of DI shown in Table 6.1, we find that the APC falls and the APS rises as DI increases. The fraction of total DI that is consumed declines as DI rises, a movement that makes it necessary for the fraction of DI that is saved to rise as DI rises.

MPC AND MPS

Marginal propensity to consume (MPC): the ratio of the change in consumption to the change in income that brought about the consumption change. The MPC thus represents the fraction of each additional (or marginal) dollar of income that will be used for consumption expenditures.

The fact that households consume a certain portion of some given total income—for example, $\frac{45}{47}$ of $470 billion disposable income—does not guarantee that they will consume the same proportion of any change in income that they might receive. The proportion, or fraction, of any change in income that is consumed is called the **marginal propensity to consume (MPC)**, 'marginal' meaning 'extra'. Alternatively stated, the MPC is the ratio of a change in consumption to the change in income that brought about the consumption change; that is:

$$\text{MPC} = \frac{\text{change in consumption}}{\text{change in income}}$$

Marginal propensity to save (MPS): the ratio of the change in saving to the change in income that brought about the saving change. The MPS thus represents the fraction of each additional (or marginal) dollar of income that will be directed to saving.

The fraction of any change in income that is saved is called the **marginal propensity to save (MPS)**; that is, MPS is the ratio of a change in saving to the change in income that brought it about:

$$\text{MPS} = \frac{\text{change in saving}}{\text{change in income}}$$

Thus, if disposable income is currently $470 billion and households for some reason find that their incomes rise by $20 billion, we find that they will consume $\frac{15}{20}$, or 0.75, and save $\frac{5}{20}$, or 0.25, of that increase in income (see Table 6.1). In other words, the MPC is $\frac{15}{20}$, or 0.75, and the MPS is $\frac{5}{20}$, or 0.25. *The sum of the MPC and the MPS for any given change in disposable income must always be 1.* That is, consuming and saving out of extra income is an either/or proposition; that fraction of any change in income that is not spent is, by definition, saved. Therefore, the fraction consumed (MPC) plus the fraction saved (MPS) must exhaust the whole increase in income:

$$\text{MPC} + \text{MPS} = 1$$

In our example, 0.75 plus 0.25 equals 1.

Economists are not in complete agreement as to the exact behaviour of the MPC and MPS as income increases. For many years it was assumed that the MPC declined and the MPS increased as income increased; that is, it was felt that a smaller and smaller fraction of increases in income would be consumed and a larger and larger fraction of these increases would be saved. Some economists, however, feel that the MPC and MPS for the economy as a whole are relatively constant. We will assume the MPC and MPS to be constant to simplify our analysis. You will note that for each of the eight $20 billion income increases shown in Table 6.1, consumption increases by $15 billion (that is, by $\frac{15}{20}$, or 0.75) of the increase in income. Saving increases by $5 billion (that is, by $\frac{5}{20}$, or 0.25) of the increase in income. We assume the MPC and MPS to be constant at 0.75 and 0.25 respectively (see columns 6 and 7).

MPC AND MPS AS SLOPES

The MPC is the numerical value of the slope of the consumption schedule and the MPS is the numerical value of the slope of the saving schedule. We know from the appendix to Chapter 1 that the slope of any line can be measured by the ratio of the vertical change to the horizontal change involved in moving from one point to another point on that line.

In Figure 6.3 we highlight the slopes of the consumption and saving lines derived from the data of Table 6.1 by enlarging relevant portions of Figures 6.2(a) and (b). If the vertical change is $15 billion and the horizontal change is $20 billion between any two points, the slope of the line is 0.75. Now it is evident in Figure 6.2(a) that the slope of the consumption schedule between any two points is measured by the change in consumption (the vertical change) relative to the change in income (the horizontal change). And this ratio, $\frac{\Delta\text{consumption}}{\Delta\text{income}}$, is the fraction of any change in income that is spent; that is, it measures the MPC. Similar reasoning tells us that the MPS measures the slope of the saving schedule.

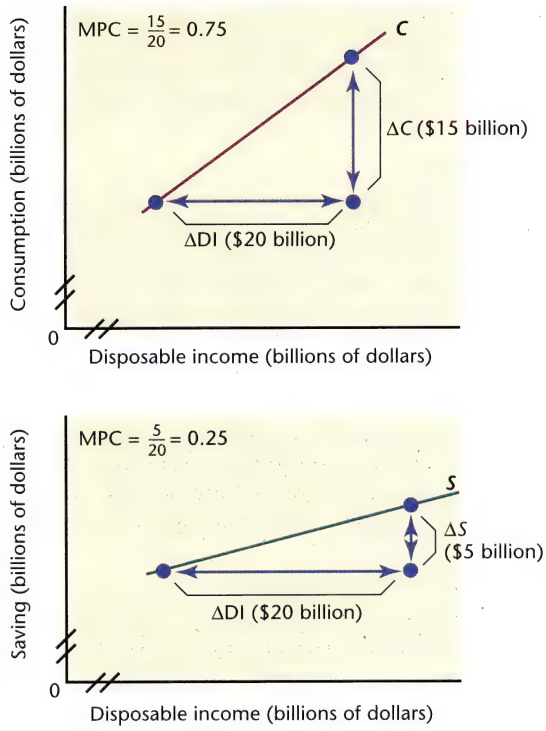


FIGURE 6.3
The marginal propensity to consume and the marginal propensity to save

The MPC is the slope of the consumption function and the MPS is the slope of the saving function.

NON-INCOME DETERMINANTS OF CONSUMPTION AND SAVING

The level of disposable income is the basic determinant of the amounts that households will consume and save, just as price is the basic determinant of the quantity demanded of any product. You will recall that changes in determinants other than price, such as consumer tastes, incomes, and so on (see Chapter 3), will cause the demand curve for a given product to shift location. Similarly, there are certain **non-income determinants of consumption and saving** that might cause households to consume more or less at each possible level of DI and change the locations of the consumption and saving schedules.

Wealth

Generally, the greater the amount of wealth households have accumulated, the larger will be the amount of consumption and the smaller the amount of saving out of any level of current income. By wealth we mean both real assets (house, automobiles, television sets, and other durables) and financial assets (cash, savings accounts, stocks, bonds, insurance policies, pensions) that households own. Households save—refrain from consumption—to accumulate wealth. The more wealth households have accumulated, the weaker is their incentive to save. Stated differently, an increase in wealth shifts the saving schedule downwards and the consumption schedule upwards.

Price level

An increase in the price level tends to shift the consumption schedule downwards, while a decrease in the price level tends to shift the consumption schedule upwards. This generalisation is closely related to our discussion of liquid assets as a determinant of consumption because changes in the price level change the real value or purchasing power of many liquid assets. Specifically, the real value of financial assets whose values are fixed in money terms will vary inversely with changes in the price level.

Example: Suppose you own a $10 000 government bond. If the price level increases by, say, 10 per cent, the real value of your $10 000 financial asset will decrease by approximately 10 per cent. Because your real financial wealth has been reduced, you will be less inclined to consume out of current income. Conversely, a decrease in the price level will increase your real financial wealth and induce you to consume a larger proportion of your current income.

A notable implication of this discussion is that, whenever we draw (locate) a particular consumption or saving schedule as in Figure 6.2, we are implicitly assuming a constant price level. This means that the horizontal axis of that figure measures real as opposed to nominal, or money, disposable income.[2]

Expectations

Household expectations concerning future prices, money incomes and the availability of goods may have a significant impact upon current spending and saving. Expectations of rising prices and product shortages tend to trigger more spending and less saving currently—that is, to shift the consumption schedule upwards and the saving schedule downwards. Why? Because it is natural for consumers to seek to avoid paying higher prices or having to 'do without'. Expected inflation and expected shortages induce people to 'buy now' to escape higher future prices and bare shelves. The expectation of rising money incomes in the future also tends to make consumers more footloose in their current spending. Conversely, expected price declines, anticipation of shrinking incomes and the feeling that goods will be abundantly available may induce consumers to reduce their consumption and build up their savings.

Consumer indebtedness

The level of consumer credit can also be expected to affect the willingness of households to consume out of current income. If households are in debt to the degree that, say, 20 or 25 per cent of their current incomes are committed to instalment payments on previous purchases, consumers may well be obliged to retrench on current consumption in order to reduce their indebtedness. Conversely, if consumer indebtedness is relatively low, households may consume at an unusually high rate by increasing this indebtedness.

Taxation

Changes in taxes will shift the consumption and saving schedules. Specifically, taxes are paid partly at the expense of consumption and partly at the expense of saving. Therefore, an increase in taxes will shift both the consumption and the saving schedules downwards. Conversely, a tax reduction will be partly consumed and partly saved by households. Thus a tax decrease will shift both the consumption and the saving schedules upwards. These ideas will be explored further in Chapter 7, where we will add the government sector to our aggregate expenditures model.

SHIFTS AND STABILITY

Three final and related points are relevant to our discussion of the consumption and saving schedules.

Terminology

The movement from one point to another on a given stable consumption schedule—for example, A to B on C_0 in Figure 6.4(a)—is called a change in the amount consumed. The sole cause of this change is a change in the level of disposable income. On the other hand, a change in the consumption schedule refers to an upward or downward shift of the entire schedule—for example, from C_0 to C_1 or C_2 in Figure 6.4(a). A relocation of the consumption schedule is obviously caused by changes in any one or more of the non-income determinants just discussed. A similar terminological distinction applies to the savings schedule.

Business IMPLICATION — CONSUMPTION EXPENDITURES AND WEALTH

During the late 1990s and early 2000 a strong growth in consumption expenditures was the basis for much of the growth in the economy. Growth in domestic retail expenditures offset some of the declines observed in export sales due to the impact of the Asian crisis. Partly, this strong growth in consumption expenditures was financed by increases in household wealth—wealth that increased due to the general rise in the value of investments in the share market and increases in the value of established housing. As individuals didn't sell their share and housing assets in most cases, these increases can be thought of as increases in paper wealth.

Paper increases or not, borrowing against the increased value of equity held in assets allowed significant increases in both personal investment and consumption expenditures. This brings us to a point for reflection. When large increases in paper wealth underpin an expansion in consumption expenditures, large falls in measured wealth can easily underpin large falls in consumption expenditures. Sales in consumer durables will be the areas most affected in each case, making these industries the most vulnerable to a reversal in fortunes.

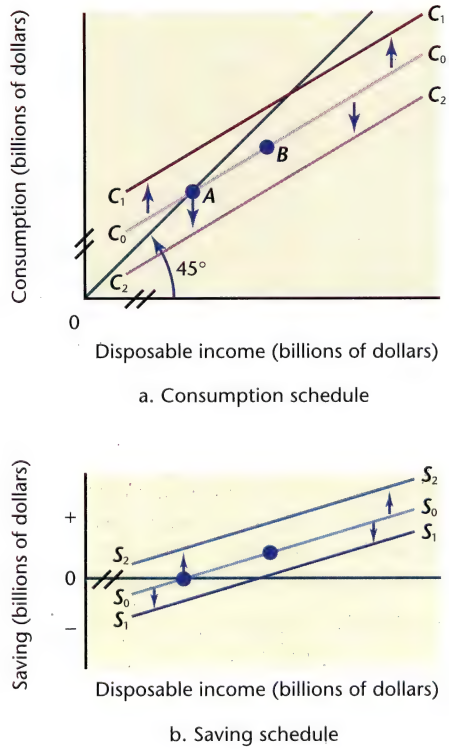


FIGURE 6.4
Shifts in the (a) consumption schedule and (b) saving schedule

A change in any one or more of the non-income determinants will cause the consumption and saving schedules to shift. If households consume more at each level of DI, they are necessarily saving less. Graphically, this means that an upshift in the consumption schedule (C_0 to C_1) entails a downshift in the saving schedule (S_0 to S_1). Conversely, if households consume less at each level of DI, they are saving more. A downshift in the consumption schedule (C_0 to C_2) is reflected in an upshift of the saving schedule (S_0 to S_2).

Schedule shifts

A related point is that, as far as the first four non-income determinants of consumption are concerned, the consumption and saving schedules will necessarily shift in opposite directions. If households decide to consume more at each possible level of disposable income, this means that they want to save less, and vice versa. Graphically, if the consumption schedule shifts upwards from C_0 to C_1 in Figure 6.4, the saving schedule will shift downwards from S_0 to S_1. Similarly, a downshift in the consumption schedule from C_0 to C_1 means an upshift in the saving schedule from S_0 to S_1. The exception to this involves the fifth non-income determinant—taxation. Households will consume less and save less in order to pay higher taxes. Hence a tax increase will lower both the consumption and saving schedules, whereas a tax cut will shift both schedules upwards (see Chapter 7).

Stability

Economists are in general agreement that, apart from deliberate government actions designed to shift them, the consumption and saving schedules are quite stable. This may be because consumption–saving decisions are strongly influenced by habit or because changes in the non-income determinants frequently work in opposite directions and therefore tend to cancel each other out.

Global SNAPSHOT — THE CONSUMPTION–INCOME RELATIONSHIP

Consumption expenditures are assumed, in our simple macroeconomic models, to be based on incomes. Thus, we would expect to see a close correspondence between the growth in private consumption expenditures and the growth rate of GDP. The following table provides data to allow you to check this relationship. To smooth out the effects that may be observed on a year-to-year basis, we have presented annual averages over the 1990–97 period.

Country or region	Annual average growth rate (%) Gross domestic product	Private consumption expenditures
Australia	3.7	3.6
Canada	2.1	1.8
China, mainland	11.9	10.1
China, Hong Kong SAR	5.3	5.9
France	1.3	1.2
India	5.9	6.0
Italy	1.1	0.3
Japan	1.4	2.0
Mexico	1.8	1.2
Norway	3.9	3.0
Russian Federation	−9.0	6.8
Switzerland	−0.1	0.4
United Kingdom	1.9	1.6
United States	2.5	2.7
World	**2.3**	**2.4**

SOURCE: World Bank, 1999 World Development Indicators *and* World Development Report 1998/99.

Questions

1. Graph the data plotting average annual growth in consumption expenditures against the annual average growth in GDP.
2. Examining your graph, do you observe the relationship between the two variables that you would expect? Is this relationship exact? Explain.
3. Are exceptions to the assumed relationship between consumption and GDP present in the data? Explain how these exceptions may be possible.

INVESTMENT

Let us now turn to investment, the second component of private spending. You will recall that investment refers to expenditures on new plants, capital equipment, machinery, and so on. What determines the level of investment spending? There are two basic determinants:

1. the expected rate of net profits that businesses hope to realise from investment spending
2. the rate of interest paid to finance investment.

EXPECTED RATE OF NET PROFIT

The level of investment spending is guided by the profit motive; the business sector buys capital goods only when it expects such purchases to be profitable. Consider a simplified example. Suppose the owner of a small cabinet-making shop is considering investing in a new sanding machine that costs $1000 and has a useful life of only one year. The new machine will presumably increase the firm's output and sales revenue. Specifically, let us suppose that the net expected revenue (that is, net of operating costs such as power, timber and labour) from the machine is $1100. In other words, after operating costs have been accounted for, the remaining expected net revenue is sufficient to cover the $1000 cost of the machine and leave a return of $100. Comparing this $100 return or profit with the $1000 costs of the machine, we find that the expected rate of net profit on the machine is obviously 10 per cent ($= \frac{\$100}{\$1000}$).

THE REAL INTEREST RATE

But there is more important cost associated with investing which our example has ignored. And that, of course, is the interest rate—the financial cost the firm must pay to borrow the money capital required for the purchase of the real capital (the sanding machine).[3] Our generalisation is this—if the expected rate of net profit (10 per cent) exceeds the interest rate (say 7 per cent), it will be profitable to invest. But if the interest rate (say, 12 per cent) exceeds the expected rate of net profit (10 per cent), it will be unprofitable to invest.

It should be emphasised that it is the real rate of interest, rather than the nominal rate, that is crucial in making investment decisions. Recall from Chapter 5 that the nominal interest rate is expressed in terms of dollars of current value, while the real interest rate is stated in terms of dollars of constant or inflation-adjusted value. In other words, the real interest rate is the nominal rate less the rate of inflation. In our sanding machine illustration we implicitly assumed a constant price level so that all our data, including the interest rate, were in real terms.

But what if inflation is occurring? Suppose a $1000 investment is estimated to yield a real (inflation-adjusted) expected rate of net profit of 10 per cent and the nominal interest rate is, say, 15 per cent. At first glance we would say the investment is unprofitable and should not be made. But assume now that there is an ongoing inflation of 10 per cent per year. This means that the investor will be paying back dollars with approximately 10 per cent less in purchasing power. While the nominal interest rate is 15 per cent, the real rate is only 5 per cent ($= 15 - 10$ per cent). Comparing this 5 per cent real interest rate with the 10 per cent expected real rate of net profit, we find that the investment is profitable and should be undertaken.

INVESTMENT-DEMAND CURVE

We must now move from our discussion of micro to macro—that is, from a single firm's investment decision to an understanding of the total demand for investment goods by the entire business sector. Assume every firm in the economy has estimated the net rate of profits from all relevant investment projects, and these data have been collected. These estimates can now be cumulated by asking: How many dollars' worth of investment projects entail a net expected rate of profits of, say, 16 per cent or more? Of 14 per cent or more? Of 12 per cent or more? And so on.

Suppose we find that there are no prospective investments that will yield an expected net profit of 16 per cent or more. But there are $5 billion of investment

opportunities with an expected net profit rate between 14 and 16 per cent; an additional $5 billion yielding between 12 and 14 per cent; still an additional $5 billion yielding between 10 and 12 per cent, and an additional $5 billion in each successive 2 per cent range of yield down to and including the 0 to 2 per cent range.

Table 6.2 Profit expectations and investment (hypothetical data)

Expected rate of net profit (%)	Amount of investment ($ billions per year)
16	0
14	5
12	10
10	15
8	20
6	25
4	30
2	35
0	40

Investment-demand schedule: a schedule of the investment – interest rate relationship. The schedule shows the cumulative level of investment demanded at various possible levels of the interest rate.

By cumulating these figures we obtain the data of Table 6.2—an **investment-demand schedule**. This is shown graphically by the investment-demand curve in Figure 6.5. Note in Table 6.2 that the figure opposite 12 per cent, for example, tells us there are $10 billion worth of investment opportunities that will yield an expected net profit of 12 per cent or more; the $10 billion, in other words, includes the $5 billion of investment that will yield an expected return of 14 per cent or more plus the $5 billion that is expected to yield between 12 and 14 per cent.

Given this cumulated information on expected net profit rates of all possible investment projects, we again introduce the interest rate, or financial cost of investing. We know from our sanding machine example that an investment project will be undertaken, provided its net expected profit rate exceeds the interest rate. Let us apply this reasoning to Figure 6.5. If we assume that the rate of interest is 12 per cent, we find that $10 billion of spending will be profitable; that is, $10 billion of investment projects entail an expected net profit rate of 12 per cent or more. Stated differently, at a financial 'price' of 12 per cent, $10 billion worth of investment goods will be demanded. Similarly, if the interest rate was lower at, say, 10 per cent, then an additional $5 billion of investment projects would become profitable and the total amount of investment goods demanded would be $15 billion (= $10 + $5). At an interest rate of 8 per cent, a further $5 billion of investment would become profitable and the total demand for investment goods would be $20 billion. At 6 per cent, investment would be $25 billion, and so on.

By applying the rule that all investment projects should be undertaken up to the point at which the expected rate of net profit equals the interest rate, we discover that the curve of Figure 6.5 is the **investment-demand curve**; that is, various possible financial prices of investing (various interest rates) are shown on the vertical axis, and the corresponding quantities of investment goods demanded are revealed on the horizontal axis. By definition, any line or curve embodying such data is the investment-demand curve. Consistent with our

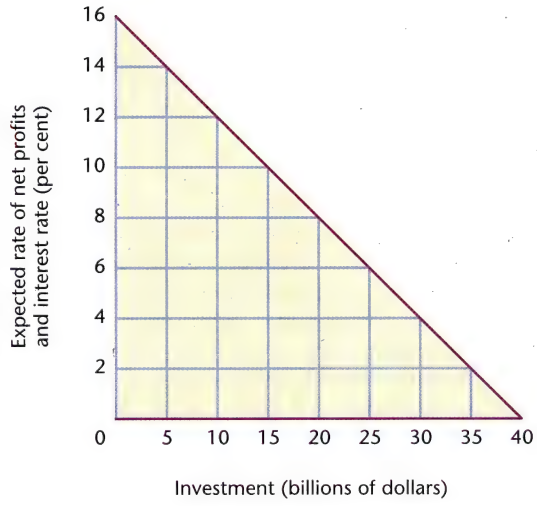


FIGURE 6.5
investment-demand curve

investment-demand curve the economy is derived by arraying all relevant investment projects in descending order of their expected rate of net profitability and applying the rule that investment should be undertaken up to the point at which the interest rate is equal to the expected rate of net profits. The investment-demand curve is down-sloping, reflecting an inverse relationship between the interest rate (the financial price of investing) and the aggregate quantity of capital goods demanded.

demand curves for products and resources in Chapter 3, we observe the inverse relationship between the interest rate (price) and the amount of spending on investment goods (quantity demanded).

This conception of the investment decision allows us to anticipate an important aspect of macroeconomic policy. In our discussion of monetary policy in Chapter 12 we will find that, by changing monetary policy, government can alter the interest rate. This is done primarily to change the level of investment spending. Think of it in this way—at any point in time, business firms in the aggregate have a wide variety of investment projects under consideration. If interest rates are high, only those projects with the highest expected rate of net profit will be undertaken. Hence, the level of investment will be small. As the interest rate is lowered, projects whose expected rate of net profits is less will also become commercially feasible and the level of investment will rise.

SHIFTS IN INVESTMENT DEMAND

In discussing the consumption schedule, we noted that, although disposable income is the key determinant of the amount consumed, there are other factors that affect consumption. These non-income determinants, you will recall, cause shifts in the consumption schedule. So it is also with the investment-demand schedule. Figure 6.5 portrays the interest rate as the main determinant of investment. But other factors or variables determine the location of the investment-demand curve. Let us briefly consider several of the more important **non-interest determinants of investment demand**, noting how changes in these determinants might shift the investment-demand curve. We observe at the outset that any factor that increases the net profitability of the investment will shift the investment-demand curve to the right. Conversely, anything that decreases the expected net profitability investment will shift the investment-demand curve to the left.

Acquisition, maintenance and operating costs

As our sanding machine example revealed, the initial costs of capital goods, along with the estimated costs of operating and maintaining those goods, are obviously important considerations in gauging the expected rate of net profitability of any particular investment. To the extent that these costs rise, the expected net rate of profits from prospective investment projects will fall, shifting the investment-demand curve to the left. Conversely, if these costs decline, expected net profit rates will rise, shifting the investment-demand curve to the right. Note that the wage policies of unions may affect the investment-demand curve because wage rates are a major operating cost.

Business taxes

Businesses look to expected profits after taxes in making their investment decisions. Hence, an increase in business taxes will lower profitability and tend to shift the investment-demand curve to the left; a tax reduction will tend to shift it to the right.

Technological change

Technological progress—the development of new products, improvements in existing products, the creation of new machinery and new production processes—is a basic stimulus to investment. The development of a more efficient machine, for example, will lower production costs or improve product quality, so increasing the expected net rate of profit from investing in the machine. Profitable new products—home computers, digital watches, compact discs, and so on—induce a flurry of investment as firms tool up for expanded production. In short, a rapid rate of technological progress shifts the investment-demand curve to the right, and vice versa.

The stock of capital goods on hand

Just as the stock of consumer goods on hand affects household consumption–saving decisions, so the stock of capital goods on hand influences the expected profit rate from additional investment in a given industry. To the extent that a given industry is well stocked with productive facilities and inventories of finished goods, investment will be retarded in that industry. The reason is obvious—such an industry will be amply equipped to fulfil present and future market demand at prices that yield mediocre profits. If an industry has enough, or even excessive, productive capacity, the expected rate of profit from further investment in the industry will be low, and therefore little or no investment will occur. Excess productive capacity tends to shift the investment-demand curve to the left; a relative scarcity of capital goods shifts it to the right.

Expectations

We noted earlier that business investment is based upon expected profits. Capital goods are durable—they may have a life expectancy of 10 or 20 years and thus the profitability of any capital investment will depend upon business planners' expectations of the future sales and future profitability of the product that the capital helps produce. Business expectations may be based upon elaborate forecasts of future business conditions that incorporate a number of 'business indicators'. Nevertheless, elusive and difficult-to-predict factors, such as changes in the domestic political climate, the thrust of foreign affairs, population growth and stock market conditions, must be taken into account on a subjective or intuitive basis. For present purposes we note that if businesses are optimistic about future business conditions, the investment-demand curve will shift to the right; a pessimistic outlook will shift it to the left.

INVESTMENT AND INCOME

To add the investment decisions of businesses to the consumption plans of households, we need to express investment plans in terms of the level of disposable income, or GDP; that is, we want to construct an **investment schedule** showing the amounts that business firms as a group plan or intend to invest at each of the various possible levels of income or output. Such a schedule will mirror the investment plans or intentions of business owners and managers

in the same way that the consumption and saving schedules reflect the consumption and saving plans of households.

We shall assume in our analysis that business investment is geared to long-term profit expectations as influenced by such considerations as technological progress, population growth and so on, and therefore is autonomous, or independent of the level of current income. More specifically, let us suppose that the investment-demand curve is as shown in Figure 6.5 and that the current rate of interest is 8 per cent. This means that the business sector will find it profitable to spend $20 billion on investment goods. In Table 6.3, columns 1 and 2, we are assuming that this level of investment will be forthcoming at every level of income. The *I* line in Figure 6.6 shows this graphically.

Table 6.3 The investment schedule (hypothetical data)

(1) Level of output and income ($ billion)	(2) Investment *I* ($ billion)	(3) Investment *I′* ($ billion)
370	20	10
390	20	12
410	20	14
430	20	16
450	20	18
470	20	20
490	20	22
510	20	24
530	20	26

This assumed independence of investment and income is admittedly a simplification. A higher level of business activity may induce additional spending on capital facilities, as suggested by columns 1 and 3 of Table 6.3 and *I′* in Figure 6.6. There are at least two reasons why investment might vary directly with income. First, investment is related to profits; much investment is financed internally out of business profits. Therefore, it is very plausible to suggest that, as disposable income and GDP rise, so will business profits and therefore the level of investment. Second, at low levels of income and output, the business sector will tend to have unused, or excess, productive capacity; that is, many industries will have idle machinery and equipment and, therefore, little incentive to purchase additional capital goods. But, as the level of income rises, this excess capacity disappears and firms are inclined to add to their stock of capital goods. Our simplification, however, is not too severely at odds with reality and will greatly facilitate later analysis.

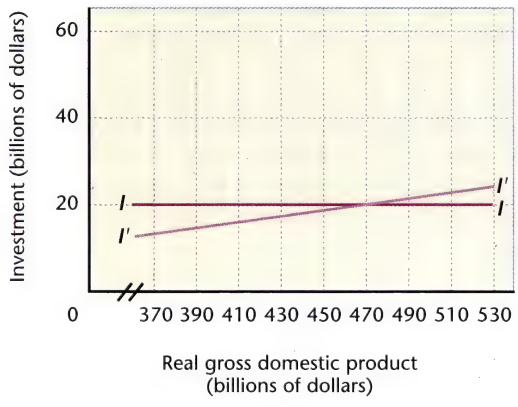
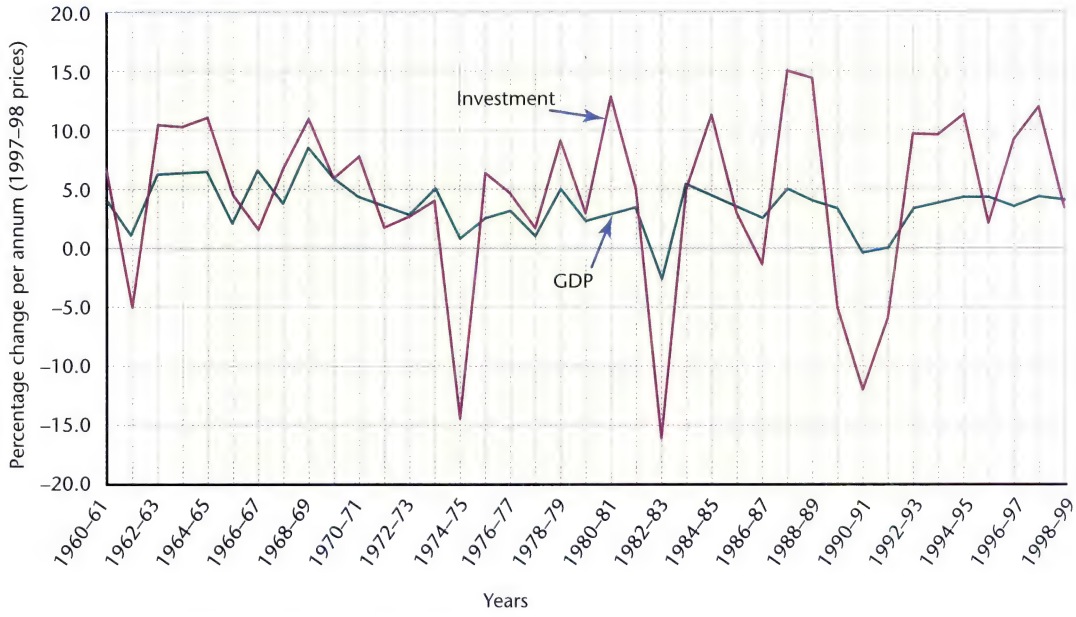


FIGURE 6.6
The investment schedule: two possibilities

Our discussion will be facilitated by employing the investment schedule *I*, which assumes that the investment plans of business are independent of the current level of income. Actually, the investment schedule may be slightly up-sloping, as suggested by *I′*.

INSTABILITY OF INVESTMENT

In contrast to consumption, investment is unstable. Proportionately, investment is the most volatile component of private spending. Figure 6.7 shows the volatility of investment and also makes clear that this variability is substantially greater than that of GDP.



SOURCE: Australian Bureau of Statistics, Australian National Accounts: National Income, Expenditure and Product, *ABS Cat. No. 5206.0, various issues.*

FIGURE 6.7
The volatility of investment

Investment spending is highly volatile in comparison to GDP. Note that the annual percentage change in investment is much larger than that for GDP.

Some of the more important factors that explain this variability are as follows.

Durability

Because of their durability, capital goods have a rather indefinite useful life. Within limits, purchases of capital goods are discretionary and therefore may be postponed. Older equipment or buildings can be scrapped and entirely replaced on the one hand, or patched up and used for a few more years on the other. Optimism about the future may prompt business planners to replace their older facilities—that is, to modernise their plants—and this obviously means a high level of investment. A slightly less optimistic view, however, may lead to very small amounts of investment as businesses repair and continue to use older facilities.

Irregularity of innovation

We have noted that technological progress is a major determinant of investment. New products and new processes provide a major stimulus to investment. However, history suggests that major innovations—railways, electricity, cars, computers, and so on—occur quite irregularly; when they do occur, these innovations induce a vast upsurge or 'wave' of investment spending that in time recedes.

Variability of profits

We know that business owners and managers invest only when they feel it will be profitable to do so and that, to a significant degree, the expectation of future profitability is influenced by the size of current profits. Current profits, however, are themselves highly variable. Hence the variability of profits contributes to the volatile nature of the incentive to invest. Further, the instability of profits may also cause investment fluctuations, because profits are a major source of funds for business investment. Businesses may tend to prefer this internal source of financing to increases in external debt or stock issue. In short, expanding profits give business planners both greater incentives and greater means to invest; declining profits have the reverse effects. The fact that actual profits are variable adds to the instability of investment.

Variability of expectations

We have already discussed how the durability of capital equipment results in the making of investment decisions upon the basis of expected net profits. Now, while there is a tendency for business firms to project current business conditions into the future, it is equally true that expectations are sometimes subject to radical revision when some event or combination of events suggests a significant change in future business conditions. What kinds of events make business confidence so capricious? Changes in the domestic and international political climate, changes in population growth and therefore in anticipated market demand, legislative actions, strikes, changes in government economic policies and many similar considerations may give rise to waves of business optimism or pessimism.

The stock market merits specific comment in this regard. Business planners frequently look to the stock market as an index or barometer of the overall confidence of society in future business conditions; a rising 'bull' market signifies public confidence in the business future, whereas a falling 'bear' market implies a lack of confidence. The stock market, however, is a highly speculative market, and initially modest changes in stock prices can be seriously intensified by less informed participants who jump on the bandwagon by buying when prices begin to rise and by selling when stock prices start to fall. Furthermore, by affecting the relative attractiveness of new capital as opposed to purchasing ownership claims (shares) to existing capital facilities, upsurges and slumps in share values also affect the level of investment.

For these and similar reasons, it is quite correct to associate most fluctuations in output and employment with changes in investment. In terms of Figure 6.6, we can think of this volatility as being reflected in frequent and substantial upward and downward shifts in the investment schedule.

Concept highlights

- The basic tools of aggregate expenditures theory are the consumption, saving and investment schedules.
- The consumption and savings schedules show the various amounts households intend to consume and save at the various possible income–output levels. The locations of the consumption and saving schedules are determined by such factors as the amounts of wealth owned by households; the price level; expectations of future income, prices and product availability; the relative size of consumer indebtedness; and taxation. The consumption and saving schedules are relatively stable.
- In considering the consumption and savings schedules, we often focus on the average and marginal propensities to consume and save. The average propensities to consume and save show the proportion or fraction of any level of total income that is consumed and saved. The marginal propensities to consume and save show the proportion or fraction of any change in total income that is consumed or saved.
- The investment-demand schedule shows the amount that businesses plan to invest at the various possible income–output levels. The immediate determinants of investment are the expected rate of net profits and the real rate of interest.
- The economy's investment-demand curve can be determined by arranging investment projects in descending order according to their expected net profitability and applying the rule that investment will be profitable up to the point at which the real interest rate equals the expected rate of net profits. The investment-demand curve reveals an inverse relationship between the interest rate and the level of aggregate investment. We make the simplifying assumption that the level of investment, determined by projecting the current interest rate off the investment-demand curve, does not vary with the level of aggregate income; that is, investment is autonomous.
- Shifts in the investment-demand curve can occur as the result of changes in the acquisition, maintenance and operating costs of capital goods; business taxes; technology; the stocks of capital goods on hand; and expectations. The durability of capital goods, the irregular occurrence of major innovations and variability in profits and expectations all contribute to the high degree of instability of investment spending.

EQUILIBRIUM LEVELS OF OUTPUT AND INCOME IN THE AGGREGATE EXPENDITURES MODEL

Equilibrium output: the level of total output that exists when the flow of income created by the production of the output gives rise to a level of total expenditures sufficient to clear the product market of that output.

We now have before us all the analytical tools necessary to explain the equilibrium levels of output, employment and income. By **equilibrium output** we refer to that level of total output which, once achieved, will be sustained in the absence of any changes in the determinants of consumption and investment. Equilibrium in the output level exists when the flow of income created by the production of that output gives rise to a level of total expenditures exactly sufficient to clear the product market of that output. This in turn will imply a certain level of employment of resources, particularly of labour.

EXPENDITURES–OUTPUT APPROACH

Aggregate expenditures – output approach to income determination: the model that utilises the relationship between aggregate expenditures and output to determine the equilibrium level of national income.

In pursuing the important task of determining and explaining the equilibrium level of output, two closely interrelated approaches will be employed: the aggregate expenditures – output (or $C + I$ = GDP) approach and the leakages–injections (or, in the simplified discussion of this chapter, the $S = I$) approach.

We will first discuss the **aggregate expenditures – output approach**, using simple arithmetic, data and graphical analysis.

TABULAR ANALYSIS

Table 6.4 (see next page) brings together the income–consumption and income–saving data of Table 6.1 and the simplified income–investment data of columns 1 and 2 in Table 6.3.

Total output

Column 2 of Table 6.4 is the total or domestic output schedule for the economy. It indicates the various possible levels of total output—that is, the various possible GDPs the business sector of the economy might produce. Producers are willing to offer each of these nine levels of output on the expectation that they will receive an identical amount of receipts of income from its sale; that is, the business sector will produce $370 billion worth of output, thereby incurring $370 billion worth of wage, rent, interest and profit costs, only if it expects that this output can be sold for $370 billion worth of receipts. Some $390 billion worth of output will be offered if businesses feel this output can be sold for $390 billion. And so it is for all the other possible levels of output.

Aggregate expenditures

The total, or aggregate, expenditure schedule is shown in column 6 of Table 6.4. It shows the total amount that will be spent at each possible output–income level. In dealing with the private sector of the economy, the aggregate expenditures schedule simply shows the amount of consumption and investment spending, $C + I$, that will be forthcoming at each output–income level. It is worth emphasising that we are concerned here with planned or intended investment as shown in column 5 of Table 6.4. Our analysis will reveal later that imbalances in aggregate expenditures and real output will result in unplanned investment in the form of inventories (column 7).

Equilibrium GDP

Now the question is this: of the nine possible levels of GDP indicated in Table 6.4, which will be the equilibrium level? That is, which level of total output will the economy be capable of sustaining? The equilibrium level of output is that output whose production will actually create total spending power just sufficient to purchase that output. In other words, the equilibrium level of GDP is where the total quantity of goods produced (GDP) is precisely equal to the total quantity of goods purchased ($C + I$).

Examination of the total output schedule of column 2 and the aggregate expenditures schedule of column 6 indicates that this equality exists only at the

$470 billion level of GDP. This is the only level of output at which the economy is willing to spend precisely the amount necessary to take the output off the market. Here the annual rates of production and spending are in balance. There is no overproduction, which results in a piling up of unsold goods and therefore cutbacks in the rate of production; nor is there an excess of total spending, which draws down inventories and prompts increases in the rate of production. In short, there is no reason for businesses to vary from this rate of production; $470 billion is therefore the equilibrium GDP.

Table 6.4 Determination of the equilibrium levels of employment, output and income: the private sector (hypothetical data)

(1) Possible levels of employment[a] (million)	(2) Level of output and income GDP = DI[b] ($ billion)	(3) Consumption C ($ billion)	(4) Saving S ($ billion)
4.0	370	375	−5
4.5	390	390	0
5.0	410	405	5
5.5	430	420	10
6.0	450	435	15
6.5	**470**	**450**	**20**
7.0	490	465	25
7.5	510	480	30
8.0	530	495	35

(5) Investment I ($ billion)	(6) Aggregate expenditures (C + I) ($ billion)	(7) Unintended investment (+) or disinvestment (−) in inventories ($ billion)	(8) Tendency of employment, output and incomes
20	395	−25	Increase
20	410	−20	Increase
20	425	−15	Increase
20	440	−10	Increase
20	455	−5	Increase
20	**470**	**0**	**Equilibrium**
20	485	+5	Decrease
20	500	+10	Decrease
20	515	+15	Decrease

a In later chapters on economic growth we will find that employment need not vary proportionately with output.

b If depreciation and net Australian income earned abroad are assumed to be zero, government is ignored, and we assume that all saving is done by households. GDP becomes equal to NI, HI and DI. Thus households receive DI equal to the value of total output.

Disequilibrium

To enhance our understanding of the meaning of the equilibrium level of GDP, let us examine other possible levels of GDP to see why they cannot be sustained. For example, at the $410 billion level of GDP, businesses would find that if they produced this output, the income created by this production would give rise to $405 billion in consumer spending. Supplemented by $20 billion of investment, the total expenditures ($C + I$) would be $425 billion, as shown in column 6. The economy obviously provides an annual rate of spending more than sufficient to purchase the current $410 billion rate of production. Because businesses are producing at a lower rate than buyers are taking goods off the shelves, an unintended decline in business inventories of $15 billion would occur (column 7) if this situation were sustained. But businesses will adjust to this imbalance by stepping up production. And a higher rate of output will mean more jobs and a higher level of total income.

In short, if aggregate expenditures exceed output, the latter will be pulled upwards. By making the same comparisons of GDP (column 2) and $C + I$ (column 6) at all other levels of GDP below the $470 billion equilibrium level, it will be found that the economy wants to spend in excess of the level at which businesses are willing to produce. The excess of total spending at all these levels of GDP will drive GDP upwards to the $470 billion level.

The reverse holds true at all levels of GDP above the $470 billion equilibrium level; that is, businesses will find that the production of these total outputs fails to generate the levels of spending needed to take them off the market. Being unable to recover the costs involved in producing these outputs, businesses will cut back on their production. For example, at the $510 billion level of output, businesses would be disappointed to find that there is insufficient spending to permit the sale of that output. Of the $510 billion worth of income that this output creates, $480 billion would be received back by businesses as consumption spending. Though supplemented by $20 billion worth of investment spending, total expenditures ($500 billion) would fall $10 billion short of the $510 billion quantity produced. If this imbalance persisted, $10 billion of inventories would pile up (column 7). But businesses will react to this unintended accumulation of unsold goods by cutting back on the rate of production. This decline in GDP will mean fewer jobs and a decline in total income. The reader should verify that deficiencies of total spending exist at all other levels of GDP above the $470 billion level.

The equilibrium level of GDP exists where the total output measured by GDP and the aggregate expenditures ($C + I$) are equal. Any excess of total spending over total output will drive the latter upwards. Any deficiency of total spending will pull GDP downwards.

GRAPHICAL ANALYSIS

The same analysis can be easily seen through a simple graph. In Figure 6.8 the 45-degree line (used earlier to graphically delineate how disposable income is divided between consumption and saving) now takes on increased significance. You will recall that the special property of the 45-degree line is that at any point on the line the value of what is being measured on the horizontal axis (in this case GDP) is equal to the value of what is being measured on the vertical axis (here it is aggregate expenditures, or $C + I$). Having discovered in our tabular analysis that the equilibrium level of total output is determined where $C + I$ equals GDP, we can say that the 45-degree line in Figure 6.8 is simply a graphical statement of this equilibrium condition.

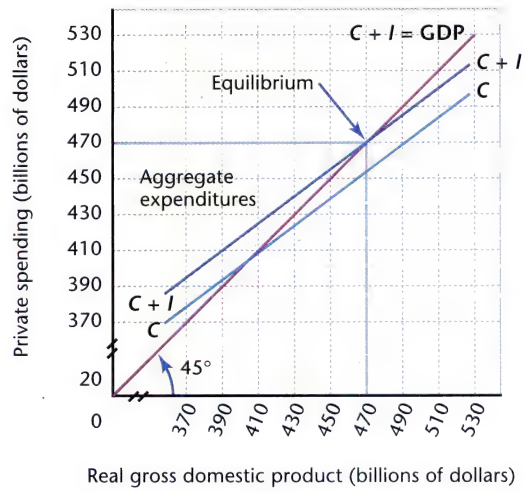


FIGURE 6.8
The aggregate expenditures – output approach to the equilibrium GDP

The aggregate expenditures schedule, $C + I$, is determined by adding a fixed amount of investment to the up-sloping consumption schedule. The equilibrium level of GDP is determined where the aggregate expenditures schedule intersects the 45-degree line, in this case at $470 billion.

Next, we must add the aggregate expenditures schedule to Figure 6.8. To do this we simply graph the consumption schedule of Figure 6.2(a) and add to it vertically the constant $20 billion amount from Figure 6.6, which, we assume, businesses plan to invest at each possible level of GDP. More directly, we can plot the $C + I$ data of column 6 in Table 6.4. Observe that the aggregate expenditures line shows total spending rising with total output and income, but that expenditures do not rise as much as income. This is so because the marginal propensity to consume is fractional. Stated differently, a part of any increase in total output and income will be saved. For our data, aggregate expenditures increase by $15 billion for every $20 billion increase in total output and income because $5 billion of each $20 billion income increment is saved.

The question is: what is the equilibrium level of GDP? Equilibrium is at that GDP that corresponds to the intersection of the aggregate expenditures schedule and the 45-degree line. Given the nature of the 45-degree line, this intersection locates the only point at which aggregate expenditures (on the vertical axis) is equal to GDP (on the horizontal axis), and this equality is the equilibrium condition. Because our aggregate expenditures schedule is based on the data of Table 6.4, we once again find the equilibrium output to be at the $470 billion level. It is evident from Figure 6.8 that no levels of GDP above the equilibrium level are sustainable, because $C + I$ falls short of GDP.

Graphically, the aggregate expenditures schedule lies below the 45-degree line. For example, at the $510 billion GDP level, $C + I$ is only $500 billion. Inventories of unsold goods rise to undesired levels. This unhappy state of affairs will prompt businesses to readjust their production sights downwards in the direction of the $470 billion output level. Conversely, at all possible levels of GDP less than the $470 billion level, the economy desires to spend in excess of what businesses are producing. $C + I$ exceeds the value of the corresponding output. Graphically, the aggregate expenditures schedule lies above the 45-degree line. At the $410 billion GDP, for example, $C + I$ totals $425 billion. Inventories decline as the rate of spending exceeds the rate of production, prompting businesses to raise their production sights in the direction of the $470 billion GDP. Unless there is some change in the consumption–saving plans of households or the investment plans of businesses, the $470 billion level of GDP will be sustained indefinitely.

LEAKAGES–INJECTIONS APPROACH

The aggregate expenditures – output approach to the determination of GDP has the advantage of spotlighting total spending as the immediate determinant of the levels of output, employment and income. Though the **leakages–injections approach** is less direct, it does have the advantage of emphasising the reason $C + I$ and GDP are unequal at all levels of output except the equilibrium level.

Leakages–injections approach to income determination: the model that utilises the required relationship between leakages from and injections back into the expenditure flow to determine the equilibrium level of national income.

Leakage: that part of income paid to households that is not consumed by households, representing a withdrawal or diversion of potential spending from the income–expenditures stream (e.g. savings).

Injection: that component of spending that is not related to consumption spending by households, representing a supplement or addition to the income–expenditures stream (e.g. investment expenditure by businesses).

The essence of the leakages–injections approach is this—under our simplifying assumptions we know that the production of any level of total output will generate an identical amount of income. But we also know a part of that income may be saved—that is, not consumed by households. Saving therefore represents a **leakage**, a withdrawal or diversion of potential spending, from the income–expenditures stream.

The consequence of saving is that consumption falls short of aggregate output or GDP; hence, by itself consumption is insufficient to take aggregate output off the market, and this fact would seem to set the stage for a decline in total output. However, the business sector does not intend to sell its entire output to consumers; some of the output will take the form of capital or investment goods that will be sold within the business sector. Investment can therefore be thought of as an **injection** of spending into the income–expenditure stream that supplements consumption; stated differently, investment is a potential offset to, or replacement for, the leakage of saving.

If the leakage of saving exceeds the injection of investment, then $C + I$ will fall short of GDP and this level of GDP will be too high to be sustainable. In other words, any GDP where saving exceeds investment will be an above-equilibrium GDP. Conversely, if the injection of investment exceeds the leakage of saving, then $C + I$ will be greater than GDP and GDP will be driven upwards. To repeat—any GDP where investment exceeds saving will be a below-equilibrium GDP. Only where $S = I$ (where the leakage of saving is exactly offset by the injection of investment) will aggregate expenditures equal the domestic output. And we know that this equality defines the equilibrium GDP.

It is important to keep in mind that in the very simple private economy of this chapter, there is only one leakage (saving) and only one injection (investment) to worry about. In general terms, a leakage is any use of income other than its expenditure on domestically produced output. Hence, in the more realistic models that follow (see Chapter 7), we will find that the additional leakages of taxes and imports will have to be incorporated into our analysis. Similarly, an injection is any supplement to consumer spending on domestic production. So, again, in later models we must add injections of government purchases and exports to our discussion. But for the present, in putting the leakages–injections approach to work, we need only compare the single leakage of saving with the sole injection of investment to assess the impact upon GDP.

TABULAR ANALYSIS

The saving schedule (columns 2 and 4) and the investment schedule (columns 2 and 5) of Table 6.4 are pertinent. Our $C + I$ = GDP approach has just led us to conclude that all levels of GDP that are less than $470 billion are unstable because the corresponding $C + I$ exceeds these GDPs, driving GDP upward. A comparison of the amounts households and businesses want to save and invest at each of the below-equilibrium GDP levels explains the excesses of total spending. In particular, at each of these relatively low GDP levels, businesses plan to invest more than households want to save. For example, at the $410 billion level of GDP, households will save only $5 billion, thereby spending $405 of their $410 billion incomes. Supplemented by $20 billion of business investment, aggregate expenditures ($C + I$) is obviously $425 billion. Total spending exceeds GDP by $15 billion ($425 − $410) because the amount businesses plan to invest at this level of GDP exceeds the amounts households save by $15 billion. A very

small 'leakage' of saving at this relatively low income level will be more than compensated for by the relatively large injection of investment spending; it is this that causes $C + I$ to exceed GDP and induce the latter upwards.

Similarly, all levels of GDP above the $470 billion level are also unstable, because here GDP exceeds $C + I$. The reason for this insufficiency of aggregate expenditures lies in the fact that at all GDP levels above $470 billion, households will want to save in excess of the amount businesses plan to invest; that is, the saving leakage is not replaced or compensated for by the injection of investment. For example, households will choose to save at the high rate of $30 billion at the $510 billion GDP. Businesses, however, will invest only $20 billion at this GDP. This $10 billion excess of saving over planned investment will cause total spending to fall $10 billion short of the value of total output. And this deficiency will cause GDP to decline.

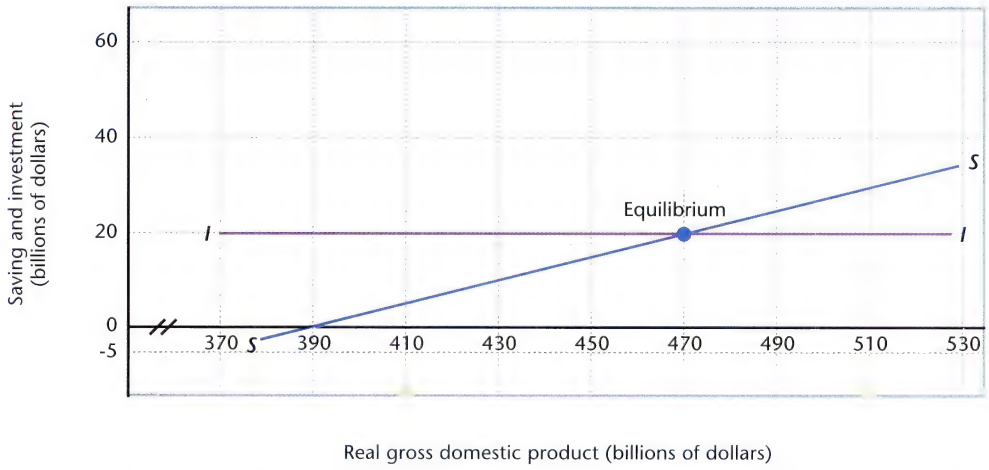
Again we verify that the equilibrium GDP is at the $470 billion level. It is only at this point that the saving desires of households and the investment plans of businesses are equal. And only when businesses and households attempt to invest and save at equal rates—where the leakages and injections are equal—will $C + I$ = GDP. Only here will the annual rates of production and spending be in balance; only here will unplanned changes in inventories be absent. We can think of it in this way—if saving were zero, consumer spending would always be sufficient to clear the market of any given GDP; that is, consumption would equal GDP. But saving can and does occur, causing consumption to fall short of GDP. Hence, only when businesses are willing to invest at the same rate at which households save will the amount by which consumption falls short of GDP be precisely compensated for.

GRAPHICAL ANALYSIS

The leakages–injections approach to determining the equilibrium GDP can be readily demonstrated graphically. In Figure 6.9 we have merely combined the saving schedule of Figure 6.2(b) and the simplified investment schedule of Figure 6.6. The numerical data for these schedules are repeated in columns 2, 4 and 5 of Table 6.4.

FIGURE 6.9
The leakages–injections approach to the equilibrium level of GDP

A second approach is to view the equilibrium level of GDP as determined by the intersection of the saving (S) and investment (I) schedules. Only at the point of equilibrium will households plan to save the amount businesses want to invest. It is the consistency of these plans that causes GDP and $C + I$ to be equal.



It is evident that the equilibrium level of GDP is at $470 billion, where the saving and investment schedules intersect. Only here do households and businesses save and invest at the same rates; therefore, only here will GDP and $C + I$ be equal. At all higher levels of GDP, households will save at a rate higher than

businesses are willing to invest. The fact that the saving leakage exceeds the investment injection causes $C + I$ to fall short of GDP, driving the latter downwards. At the $510 billion GDP, for example, saving of $30 billion will exceed investment of $20 billion by $10 billion, with the result that $C + I$ is $500 billion, which is $10 billion short of GDP. At all levels of GDP below the $470 billion equilibrium level, businesses will desire to invest at a rate in excess of the amount households save. Here the injection of investment exceeds the leakage of saving so that $C + I$ exceeds GDP, driving the latter upwards. To illustrate—at the $410 billion level of GDP the $5 billion leakage of saving is more than compensated for by the $20 billion that businesses desire to invest. The result is that $C + I$ exceeds GDP by $15 billion, inducing businesses to produce a larger GDP.

PLANNED VERSUS ACTUAL INVESTMENT

Planned saving: the level of savings that households intend to achieve over a specified period.

Planned investment: the level of investment, including inventory investment, that businesses plan to make within the specified period.

We have emphasised that because savers and investors are essentially different groups and are differently motivated, discrepancies in saving and investment can occur and these differences bring about changes in the level of GDP. Now we must recognise that, in another sense, saving and investment must always be equal to one another! This apparent contradiction concerning the equality of saving and investment is resolved when we distinguish between **planned saving and investment** (which need not be equal) and **actual saving and investment** (which by definition must be equal). The catch, essentially, is that actual investment consists of both planned and **unplanned investment** (unintended changes in inventory investment), and the latter functions as a balancing item that always equates the actual amounts saved and invested in any period of time.

DISEQUILIBRIUM AND INVENTORIES

Actual saving: the level of saving achieved by households, based on the incomes that they receive and the MPS.

Actual investment: the sum of planned and unplanned investment over a specified time period.

Unplanned investment: unintended changes in the level of business inventories.

Consider, for example, the $490 billion above-equilibrium GDP (Table 6.4). What would happen if businesses produced this output, thinking they could sell it? At this level households save $25 billion of their $490 billion DI, so consumption is only $465 billion. Planned investment is $20 billion; that is, businesses plan to buy $20 billion worth of capital goods. This means aggregate spending ($C + I$) is $485 billion, and sales therefore fall short of production by $5 billion. This extra $5 billion of goods is obviously retained by businesses as an unintended or unplanned increase in inventories (column 7). It is unintended because it results from the failure of total spending to take total output off the market. Remembering that, by definition, changes in inventories are a part of investment, we note that actual investment of $25 billion ($20 planned plus $5 unplanned) equals saving of $25 billion, even though saving exceeds planned investment by $5 billion. Businesses, not anxious to accumulate unwanted inventories at this annual rate, will react by cutting back on production.

Now look at the below-equilibrium $450 billion output (Table 6.4). Because households save only $15 billion of their $450 billion DI, consumption is $435 billion. Businesses plan to invest $20 billion, so aggregate expenditures are $455 billion; that is, sales exceed production by $5 billion. How can this be? The answer is that an unplanned decline in business inventories has occurred. More specifically, businesses have unintentionally disinvested $5 billion in inventories (column 7). Note once again that actual investment is $15 billion ($20 billion planned minus $5 billion unintended or unplanned) and equal to saving of $15 billion, even though planned investment exceeds saving by $5 billion.

This unplanned decline in investment in inventories due to the excess of sales over production will induce businesses to increase the GDP by expanding production.

To summarise—at all above-equilibrium levels of GDP (where saving exceeds planned investment), actual investment and saving are equal because of unintended increases in inventories that by definition, are included as a part of actual investment. Graphically (see Figure 6.9) the unintended inventory increase is measured by the vertical distance the saving schedule lies above the (planned) investment schedule. At all below-equilibrium levels of GDP (where planned investment exceeds saving), actual investment is equal to saving because of unintended decreases in inventories that must be subtracted from planned investment to determine actual investment. These untended inventory declines are shown graphically as the vertical distance the (planned) investment schedule lies above the saving schedule.

ACHIEVING EQUILIBRIUM

These distinctions are important because they correctly suggest that it is the equality of planned investment and saving that determines the equilibrium level of GDP. We can think of the process by which equilibrium is achieved as follows:

1. A difference between saving and planned investment causes a difference between the production and spending plans of the economy as a whole.
2. This difference between aggregate production and spending plans results in unintended investment or disinvestment in inventories.
3. As long as unintended investment in inventories persists, businesses will revise their production plans downwards and so reduce the GDP. Conversely, as long as unintended disinvestment in inventories exists, firms will revise their production plans upwards and increase the GDP. Both types of movements in GDP are towards equilibrium in that they tend to bring about the equality of planned investment and saving.
4. Only where planned investment and saving are equal is the level of GDP stable or in equilibrium; that is, only where planned investment equals saving is there no unintended investment or disinvestment in inventories to drive the GDP downwards or upwards. Note in column 7 of Table 6.4 that only at the equilibrium GDP is there no unintended investment or disinvestment in inventories.



Concept highlights

- The two approaches for determining the equilibrium level of income within the aggregate expenditures framework are the expenditures–output approach and the leakages–injections approach.
- The aggregate expenditures – output approach to the determination of GDP spotlights total spending as the immediate determinant of the levels of output, employment and income. For a private (non-government) economy, the equilibrium level of GDP is that where the aggregate expenditures and domestic output are equal. Graphically, equilibrium occurs where the $C + I$ line intersects the 45-degree line.
- A complementary leakages–injections approach, although less direct than the expenditures–output approach, emphasises why $C + I$ and GDP are unequal at all levels of output except the equilibrium level. Equilibrium GDP occurs only at the point where the amount households plan to save and the amount businesses plan to invest are equal. This is at the point where the saving and investment schedules intersect.

- The driving force towards equilibrium in these models is the role played by unplanned investment (or disinvestment). At any GDP greater than the equilibrium GDP, domestic output will exceed aggregate spending—planned saving exceeds planned investment. This results in unintended investment in inventories, depressed profits and eventual declines in output, employment and income. At any below-equilibrium GDP, aggregate expenditures will exceed domestic output—planned investment exceeds planned savings. Unintended disinvestment in inventories, and substantial profits will bring about eventual increases in GDP.

Concept application

Our simple tools of aggregate expenditures analysis have shown us how equilibrium income, output and employment are determined in a private, closed economy. We will now use these tools to analyse an apparent paradox—that of the paradox of thrift, so named because it shows that increases in society's average propensity to save *may* reduce output and employment, at least in the short term.

PARADOX OF THRIFT

The paradox of thrift: the paradox that if society attempts to save more, it may end up actually saving the same amount, or even less, due to the multiple decline in the equilibrium GDP which the withdrawal of aggregate expenditures causes.

A curious paradox—dubbed the **paradox of thrift**—is suggested by the leakages–injections approach to GDP determination. The paradox is that if society attempts to save more, it may end up actually saving the same amount, or even less.

Figure 6.10 illustrates this paradox. Suppose I and S_1 are the current planned investment and saving schedules that determine a $470 billion equilibrium GDP. Now assume that households, perhaps anticipating a recession, attempt to save, say, $5 billion more at each income level to provide a nest egg against the expected bad times. This attempt to save more is reflected in an upward shift of the saving schedule from S_1 to S_2. But this very upshift creates an excess of saving over planned investment at the current $470 billion equilibrium output. And we know that this small increase in saving (decline in consumption) will be reflected in a much larger—$20 billion in this case—decline in equilibrium GDP.

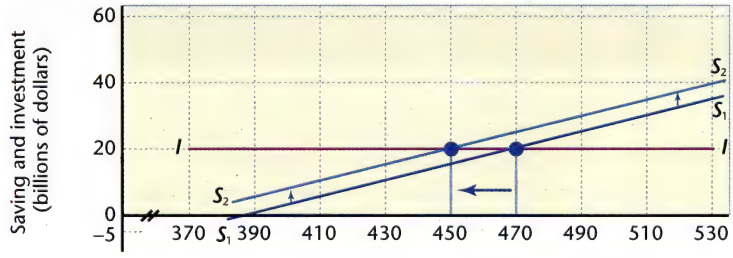


FIGURE 6.10
The paradox of thrift

Unless offset by an upshift in the investment schedule, any attempt by households to save more (S_1 to S_2) will be frustrated by a multiple decline in the equilibrium GDP.

There is a paradox here in several different senses:

1. Note that at the new $450 billion equilibrium GDP, households are saving the same amount they did at the original $470 billion GDP. Society's attempt to save more has been frustrated by the multiple decline in the equilibrium GDP which that attempt itself caused.

2. This analysis suggests that thrift, which has always been highly esteemed in our economy, can be something of a social vice. From the individual's point

of view, a dollar saved may be a dollar earned. But from the social point of view, a dollar saved is a dollar not spent and therefore causes a decline in someone else's income. The act of thrift may be virtuous from the individual's viewpoint but disastrous from the social standpoint because of its undesirable effects upon total output and employment.

3 It is ironic, if not paradoxical, that households may be most strongly induced to save more (consume less) at the very time when increased saving is most inappropriate and economically undesirable—that is, when the economy seems to be backsliding into a recession. An individual fearing the loss of a job will hardly be inclined to go on a spending spree. In our scenario, more saving has made an anticipated recession a reality.

Note that the paradox of thrift and its implications could be altered in an important respect. If rapid growth is a desired social goal, additional saving could be virtuous when matched by an equal increase in investment. This will, over the longer term, increase society's ability to produce the goods and services that it wants. In the shorter term, the additional injection of investment expenditures will add to aggregate demand so as to maintain the levels of output, incomes and employment.

Concept highlights

- The paradox of thrift is that attempts by society to save more may be frustrated through the reduction in incomes and output that occurs as a direct result of the falls in consumption expenditure associated with the increase in saving. This is because saving is a leakage from the expenditure flows.
- The paradox of thrift reminds us that although saving is seen to be a virtue in most societies, it may not provide benefits to society unless it is matched by an injection—particularly increased investment—that provides both short-term and long-term benefits.

SUMMARY

1 Our initial development of the aggregate expenditures model deals with expenditures, incomes and output in a private, closed economy. This involves the following set of assumptions:
- The explicit presence and impact of government are ignored—the economy operates under laissez-faire capitalism.
- There are only domestic economic activities—no international trade transactions; net Australian income earned abroad is zero.

This leaves us to examine the decisions and interactions of *domestic* businesses and households only, as they determine equilibrium output, income and employment for the economy.

2 To simplify the model we make a further set of assumptions:
- All saving is personal savings, with households basing their desired levels of saving purely upon their income levels.
- All investment is net investment—depreciation is zero.
- All investment decisions are made by business, with the planned level of investment being influenced only by real interest rates.

- Price–wage inflexibility exists as a feature of the economy—prices, including wages, are generally fixed over the time frame of the analysis.

3 We may justify our assumptions that savers and investors are substantially different groups who make their saving and investment decisions for different reasons. Households make saving decisions to provide for future needs, to purchase consumer durables, to protect against unforeseen events, and for highly institutionalised or contractual reasons, for example superannuation. These reasons are largely unrelated to the interest rate. Business organisations, particularly companies, make the majority of investment decisions. The rate of profit that business firms expect to realise on the investment is, undoubtedly, the crucial determinant of the amounts they desire to invest. However, the cost of obtaining financial capital—the real interest rate—is undoubtedly a consideration in formulating investment plans.

4 Price–wage inflexibility may be justified on both practical and theoretical grounds. Market power, in the form of union and business monopolies, will make prices inflexible downwards. Menu costs—the cost of changing and notifying of price changes—will also lead to 'lumpiness' and delays in the changing of prices. Minimum-wage legislation and the need to maintain workforce morale and productivity virtually eliminate the possibility of substantial wage reductions.

5 The basic tools of aggregate expenditures theory are the consumption, saving and investment schedules that show the various amounts that households intend to consume and save and that businesses plan to invest at the various possible income–output levels.

6 The locations of the consumption and saving schedules are determined by such factors as (a) amounts of wealth owned by households; (b) price level; (c) expectations of future income, future prices and product availability; (d) relative size of consumer indebtedness; and (e) taxation. The consumption (C) and saving (S) schedules are relatively stable.

7 The average propensities to consume and save (APC and APS) show the proportion or fraction of any level of total income that is consumed and saved. The marginal propensities to consume and save (MPC and MPS) show the proportion or fraction of any change in total income that is consumed or saved. In our private, closed economy model we may note that that both the average and marginal propensities sum to one; that is:

$$APC + APS = 1$$

$$MPC + MPS = 1$$

The implication is that each dollar, and each incremental dollar, are saved or consumed by households.

8 The immediate determinants of investment are (a) the expected rate of net profits; and (b) the real rate of interest. The economy's investment-demand curve can be determined by arranging investment projects in descending order according to their expected net profitability and applying the rule that investment will be profitable up to the point at which the real interest rate equals the expected rate of net profits. The investment-demand curve reveals an inverse relationship between the interest rate and the level of aggregate investment. We make the simplifying assumption that the level of investment, determined by projecting the current interest rate off the investment-demand curve, does not vary with the level of aggregate income (autonomous investment).

9 Shifts in the investment-demand curve can occur as the result of changes in (a) acquisition, maintenance and operating costs of capital goods; (b) business taxes; (c) technology; (d) stocks of capital goods on hand; (e) expectations. The durability of capital goods, the irregular occurrence of major innovations, and variability in profits and expectations all contribute to the high degree of instability of investment spending.

10 The two approaches for determining the equilibrium level of income within the aggregate expenditures framework are the expenditures–output approach and the leakages–injections approach.

11 For a private (non-government) economy, the equilibrium level of GDP is that where the aggregate expenditures and domestic output are equal or, graphically, where the $C + I$ line intersects the 45-degree line. At any GDP greater than the equilibrium GDP, domestic output will exceed aggregate spending, resulting in unintended investment in inventories, depressed profits and eventual declines in output, employment and income. At any below-equilibrium GDP, the aggregate expenditures will exceed the domestic output, resulting in unintended disinvestment in inventories, substantial profits and eventual increases in GDP.

12 The complementary leakages–injections approach determines the equilibrium GDP at the point where the amount households save and the amount businesses plan to invest are equal. This is at the point where the saving and investment schedules intersect. Any excess of saving over planned investment will cause a shortage of total spending, forcing GDP to fall. Any excess of planned investment over saving will cause an excess of total spending, inducing GDP to rise. These changes in GDP will in both cases correct the assumed discrepancies in saving and planned investment.

13 The driving force towards equilibrium in these models is the role played by unplanned investment (or disinvestment). At any GDP greater than the equilibrium GDP, domestic output will exceed aggregate spending—planned saving exceeds planned investment. The resulting unintended investment in inventories will lead to depressed profits and eventual declines in output, employment and income. At any below-equilibrium GDP, aggregate expenditures will exceed domestic output—planned investment exceeds planned savings. The resulting unintended disinvestment in inventories will lead to substantial increases in profits and eventual increases in GDP as firms hire additional resource to boost production.

14 The paradox of thrift provides a useful application of the leakages–injections model of equilibrium in the private, closed economy. The paradox is that attempts by society to save more may be frustrated through the reduction in incomes and output that occurs as a direct result of the falls in consumption expenditure associated with the increase in saving.

15 The paradox of thrift reminds us that although saving is seen to be a virtue in most societies, it is a leakage from the expenditure flows. Thus it may not provide benefits to society unless increased savings are matched by an offsetting injection—particularly increased investment. Such investment will provide both short-term and long-term benefits to the economy, in terms of demand in the short term and increased productive capacity in the long term.

KEY TERMS *and* CONCEPTS *to remember*

aggregate expenditures 188
aggregate expenditures – output approach to income determination 207
average propensities to consume and save 193
break-even income 192
closed economy 186
consumption and saving schedules 191
equilibrium output 206
injection 211
investment-demand schedule and curve 200
investment schedule 202
leakage 211
leakages–injections approach to income determination 210
marginal propensities to consume and save 193–194
menu costs 187
non-income determinants of consumption and saving 195
non-interest determinants of investment demand 201
paradox of thrift 215
planned and actual investment 213
planned and actual saving 213
price–wage inflexibility 186
private economy 186
unplanned investment 213

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What are the assumptions of the aggregate expenditures model of the private, closed economy? List each.

2 How may we justify the assumption that savings and investment decisions are made by different groups? Explain.

3 What features of our modern economy limit price–wage flexibility in the short term? Explain how each might affect price flexibility.

4 Explain precisely what relationships are shown by (a) the consumption schedule; (b) the saving schedule; and (c) the investment schedule.

5 What are the basic determinants of the consumption and saving schedules? What are the basic determinants of your own level of consumption?

6 What are the non-income determinants of consumption and saving? Describe each briefly.

7 What are the APC and MPC? What are the APS and MPS? Precisely how are the APC and MPC different? Why must the sum of MPC and MPS equal one?

8 What are the basic determinants of investment? Explain the relationship between the interest rate and the level of investment.

9 What factors will lead to shifts in the investment-demand curve? Describe each briefly.

10 Why is the investment schedule less stable than the consumption–saving schedules? What features associated with investment lead to this instability? Explain.

11 Describe the process by which equilibrium output is determined under (a) the expenditures–output approach; and (b) the leakages–injections approach.

12 How does the economy adjust to disequilibrium between expenditures and output or between leakages and injections? What are the key variables in this process? Explain their role in detail.

13 What is the paradox of thrift? Of what relevance might this paradox be to policy makers? Explain your reasoning.



1 Explain graphically the determination of the equilibrium GDP for the private sector of the economy by (a) the aggregate expenditures – output approach; (b) the leakages–injections approach. Why must these two approaches always yield the same equilibrium GDP? Explain why the intersection of the aggregate expenditures schedule and the 45-degree line determines the equilibrium level of GDP.

2 Refer to the table below and complete the following:

(a) Show the consumption and saving schedules graphically.

(b) Determine the APS and APC for each level of income.

(c) Now determine the MPC and MPS for each change in the income level.

(d) Locate the break-even point. How is it possible for households to dissave at very low income levels?

(e) If the proportion of total income that is consumed decreases and the proportion that is saved increases as income rises, explain both verbally and graphically how the MPC and MPS can be constant at various levels of income.

Level of output and income (GDP = DI) ($ billion)	Consumption ($ billion)	Saving ($ billion)	APC	APS	MPC	MPS
240		–4				
260		0				
280		4				
300		8				
320		12				
340		16				
360		20				
380		24				
400		28				

3 Explain how each of the following will affect the consumption and saving schedules or the investment schedule:

(a) a decline in the amount of government bonds that consumers are holding

(b) the threat of limited non-nuclear war, leading the public to expect future shortages of consumer durables

(c) a decline in the interest rate

(d) a sharp decline in share prices

(e) an increase in the rate of population growth

(f) the development of a significantly cheaper method of manufacturing pig iron from ore

(g) the announcement that the social security program is to be restricted in both coverage and size of benefits

(h) the expectation that mild inflation will persist in the next decade

(i) a 6 per cent reduction in the price level.

4 Assume there are no investment projects in the economy that yield an expected rate of net profit of 25 per cent or more. But suppose there are $10 billion worth of investment projects yielding net expected profits between 20 and 25 per cent, another $10 billion yielding between 15 and 20 per cent, another $10 billion between 10 and 15 per cent, and so forth. Cumulate these data and present them graphically, putting the expected rate of net profits on the vertical axis and the amount of investment on the horizontal axis. What will be the equilibrium level of aggregate investment if the interest rate is (a) 15 per cent; (b) 10 per cent; and (c) 5 per cent? Explain why this curve is the investment-demand curve.

5 Linear equations for the consumption and saving schedules take the general form $C = a + bY$ and $S = a + (1 - b)Y$, where C, S and Y are consumption, saving and national income respectively. The constant a represents the vertical intercept, and b is the slope of the consumption schedule.

(a) Use the given data to develop specific numerical values for the consumption and saving equations. Write the equations using these values.

(b) What is the economic meaning of b? What is the economic meaning of $(1 - b)$?

Household disposable income (DI) ($ billion)	Consumption (C) ($ billion)
0	80
100	140
200	200
300	280
400	320

Application & analysis

1 'Unemployment can be avoided so long as businesses are willing to accept lower product prices, and workers to accept lower wage rates.' Critically evaluate this statement. What features of our modern economy would preclude these adjustments from occurring? What might happen to output and employment if these changes did occur? Explain.

2 Empirically it appears that the amount of each extra dollar of disposable income that is saved varies with the level of income earned. Thus, those on higher incomes will, on average, devote a greater amount of each marginal dollar earned to saving. Those on very low incomes may, on average, consume all or nearly all of each marginal dollar received. What does this imply about the relationship between the MPC and income and the MPS and income? What might this imply about the shape of the consumption and

savings schedules? Will this alter the impact on equilibrium GDP of a change in investment? Explain, and show your analysis graphically.

3 Wealth may play a major role in driving consumption expenditures. Indeed, the strong increases in consumption expenditures seen in countries such as Australia and the United States during the second half of the 1990s have been explained as being based on rapid increases in wealth. What has been the basis for much of the increase in wealth during this period in places like Australia and the United States? You should search the Internet or your library for a few recent articles in major publications such as the *Economist* and *Business Review Weekly*. What might this increasing reliance on wealth as a driving factor in consumption imply about the stability of the consumption and savings functions in the future? Explain.

NOTES

1 It should be stressed that our example, which appears again in later chapters, utilises hypothetical data. In the example GDP is assumed to be around $500 billion—in fact, Australian GDP in 1998–99 was $593 billion.

2 In Chapter 8 we will reconcile the constant-price-level aggregate expenditures model and its analysis with that variable price level embodied in the aggregate demand – aggregate supply model.

3 The role of the interest rate as a cost in investing in real capital is valid even if the firm does not borrow but, rather, finances the investment internally out of funds saved from past profits. By using this money to invest in the sander, the firm incurs an opportunity cost in the sense that it forgoes the interest income it could have realised by lending the funds to someone else or through the purchase of an alternative financial asset.

A LAST WORD ASIA: TOO MUCH THRIFT

A lack of domestic demand is hindering the continued growth prospects of China. Nervous consumers are saving rather than spending their incomes. Furthermore, China's banks have developed a new-found reluctance to lend, making the purchase of goods and services by the average consumer even more problematic.

Shops in Beijing and other big Chinese cities say that what looked like a promising spurt in spending in January had fizzled out by the end of March. No one, certainly no young Chinese, is nostalgic for the minimal state-run comforts of the past, but, equally, there is concern about a future in which housing, education and health care are going to cost more. Many Chinese may also be worried about losing their jobs. The money that might have gone on spending has been saved instead.

The country's Communist rulers, who covet popularity as much as any capitalist politician, are anxious to see the economy come to life, and will take some comfort that it is showing signs of picking up at last. This week it was announced that GDP grew by 8.1 per cent in the first quarter of 2000, year-on-year. Perhaps the Chinese are about to spend more. And perhaps the economy will continue to pick up. Perhaps.

For each of the past seven years, China's growth has slowed, and a further fall in growth is expected this year. True, the forecast of 7 per cent for 2000 seems respectable by most standards. But in China one way to make the figures look good is to record as growth unwanted stocks of shoddy goods.

Yet China would have been better off had the goods never been produced. The stocks actually represent losses in the system, and their financial cost is largely being borne by state banks that have lent money they now cannot get back. One of the

reasons that the rate of growth has slowed over the years is the banks' increasing unwillingness to lend, even to the deserving. So in a bid to get growth going again, the government has put moral pressure on the banks to lend to favoured projects, and it has spent heavily through the budget.

The government's spending binge helped industrial output to rise by 10.7 per cent in the first quarter of 2000, compared with a year earlier. This must have given growth a boost, and perhaps helped put a cap on rising social tensions caused by layoffs. But government spending is being channelled to the state sector, which is the least efficient part of the economy.

True, the amount of contracted foreign investment jumped by 27 per cent in the first three months. And exports are doing well. In the first three months of this year, they jumped by 39 per cent, to $52 billion. But China's is an economy driven mainly by domestic demand and investment, and exports, in the long run, play only a supporting role. Moreover, they are mostly produced by private companies.

What of the aids to the economy that come from attempts to restructure the state sector? The restructuring is key to any sustainable recovery. A lot of production capacity is surplus to requirements. Unless it is cut, the drag of oversupply remains.

Here, the picture is also mixed. Work by Jean-Francois Huchet, of the French Centre for Research on Contemporary China, shows that in those sectors where competition is greatest (for instance, in some consumer goods), there is least oversupply. The textile industry has shrunk greatly and is now on a firmer footing. But in the steel and cement industries overcapacity is still huge. Rather than shutting down inefficient plants, cities and provinces force profitable ones to take them over: the capacity remains. To make matters worse, local officials find ways to ignore orders from central government to close plants.

So industrial restructuring has not gone as far as might have been hoped. On the other hand, the financial position of both the banks and the state enterprises has seen a big change for the better, largely thanks to banks being able to take bad loans off their books. In the past year, 'asset management companies' (AMCs) have been set up to take over the banks' bad loans. Thus, at a stroke, the balance sheets of the state banks have been cleaned up, allowing them to feel more comfortable to lend again—this time, with luck, on a more commercial basis.

Some of the state-sector debt that the AMCs are taking over is being swapped for equity in the troubled companies. This way, state-owned enterprises now also have a lighter debt burden. It helps explain why state-company profits leapt by 40 per cent in the last quarter of 1999. Certainly, the government will one day have to pick up the bill for the many rotten assets being taken over by the AMCs. What matters now is that the AMCs should reduce the corporate sector's debts, while allowing banks to start afresh with a cleaner slate.

This does not yet add up to China having turned the corner. The government's spending binge has wasted billions of dollars as money has gone to inefficient state ventures. It would have been better to have put the money directly into consumers' hands. That way consumers, not government, would have made spending decisions that would have benefited competitive companies and penalised the inefficient, so helping along the restructuring.

Without clear signs of new household spending and business investment, China's recovery will have to depend upon exports. What happens to these lies beyond the Chinese government's control. Exports have recently been driven by strong demand in Europe and America. It would be serious were such demand to falter.

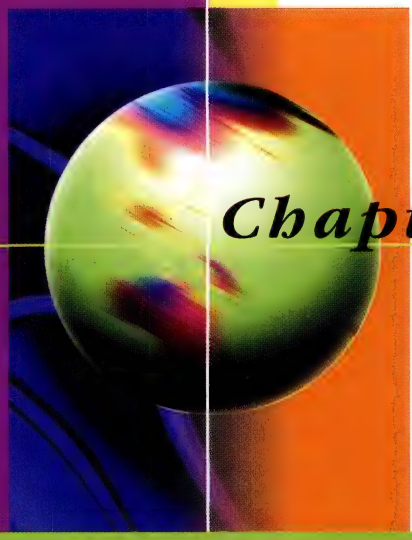
SOURCE: Economist, *22 April 2000.*

Questions

1 What factors are causing households to be unwilling or unable to undertake large increases in consumption spending in China? Discuss how each of these factors might influence consumption expenditure.

2 The lack of willingness on the part of consumers to spend provides us with a good example of which paradox in economics? What are the implications of this paradox for equilibrium income and employment in China?

3 In what ways could the government have encouraged household consumption expenditure with the money that it has used to prop up state-owned enterprises? Explain.



Chapter 7 MULTIPLIERS, GOVERNMENT BUDGETS AND NET EXPORTS

INTRODUCTION

In the previous chapter we saw how equilibrium in the level of real GDP was achieved in a private closed economy. Now we wish to examine why and how the level of equilibrium income may change in this economy. This will provide us with an insight into the economic forces underlying the business cycle. In addition, we wish to make our aggregate expenditures model more realistic by including the important government and foreign sectors.

The first task of this chapter is to examine the impact of changes in the level of investment on equilibrium real GDP, income and employment, using the simplifying assumptions of Chapter 6. Our analysis will lead to an important conclusion—a change in investment leads to a multiplied change in output and income! Second, we add the public sector to the analysis of the equilibrium level of GDP, producing a model of a closed 'mixed' economy. Finally, we will 'open' the economy and introduce a foreign trade sector. Thus we will be adding two more sets of leakages and injections to our model. Both taxes and import expenditures represent leakages from the expenditures flow, while government and export expenditures represent injections into the flow of expenditures.

It is important to remember at this point that households and businesses base their consumption and investment decisions on private self-interest. Also, it is important to remember that the sum of these decisions may result in either a recession or inflation. In contrast, government is an instrument of society as a whole; hence, within limits, government's decisions concerning spending and taxing can be altered to influence the equilibrium level of GDP for the general welfare. In particular, a fundamental function of the public sector is to stabilise the economy. This stabilisation is achieved in part through fiscal policy; that is, through the manipulation of the public budget—government expenditures and tax collections—for the express purpose of increasing output and employment or reducing the rate of inflation.

Note that we will continue to assume for most of this chapter that considerable slack is present in the economy. Thus, as in Chapter 6, the price level is generally assumed to be constant.

LEARNING OBJECTIVES

- **Analyse the impact of changes in the level of investment on equilibrium real GDP, income and employment—the multiplier effect.**
- **Discuss the rationale for the presence of the multiplier.**
- **Examine the difference that may exist between the equilibrium level of output and that corresponding to the full-employment level of output.**
- **Discuss the nature of recessionary and inflationary gaps.**
- **Analyse the impact of government purchases and taxes on equilibrium GDP.**
- **Introduce the macroeconomic effects of foreign trade on equilibrium GDP.**
- **Apply our model to explain the concept of the balanced-budget multiplier.**

CHANGES IN EQUILIBRIUM GDP AND THE MULTIPLIER

So far, we have been concerned with explaining the equilibrium levels of total output and income. But we saw in Chapter 5 that the GDP of Australian capitalism is actually seldom stable; rather, it is characterised by long-run growth and punctuated by cyclical fluctuations. Let us turn to the questions of why and how the equilibrium level of real GDP fluctuates.

The equilibrium level of GDP will change in response to changes in the investment schedule or the saving–consumption schedules. Because investment expenditures generally are less stable than the saving–consumption schedules, we will assume that changes in the investment schedule occur. The impact of changes in investment can be readily envisioned through Figure 7.1. Suppose the expected rate of net profit on investment rises (shifting the investment-demand curve of Figure 6.5 to the right) or the interest rate falls (moving down the stable curve). As a result, investment spending increases by, say, $5 billion. This is indicated in Figure 7.1(a) as an upward shift in the aggregate expenditures schedule from $(C + I)_0$ to $(C + I)_1$, and in Figure 7.1(b) as an upward shift in the investment schedule from I_0, to I_1. In each of these portrayals the result is a rise in the equilibrium GDP from $470 to $490 billion.

Conversely, if the expected rate of net profits from investment decreases or the interest rate rises, a decline in investment expenditures of, say, $5 billion will occur. This is shown by the downward shift of the investment schedule from I_0 to I_2 in Figure 7.1(b) and of the aggregate expenditures schedule from $(C + I)_0$ to $(C + I)_2$ in Figure 7.1(a).

In each case, these shifts cause the equilibrium GDP to fall from the original $470 billion level to $450 billion. You should verify these conclusions in terms of Table 6.4 by substituting $25 billion and then $15 billion for the $20 billion investment figure given in the table.

Incidentally—and at the risk of getting ahead of ourselves—the indicated $5 billion changes in investment may be the direct result of economic policy. Looking back at Table 6.2, we find that the initial $20 billion level of investment is associated with an 8 per cent interest rate. If the economy is in a recession, the monetary authorities may purposely negotiate a reduction in the interest rate to

6 per cent, causing a $5 billion increase in investment and so in aggregate expenditures to stimulate the economy. Conversely, if, with the initial $20 billion of investment, the economy faces a demand-pull inflation problem, the monetary authorities may increase the interest rate to 10 per cent, so reducing investment and aggregate expenditures to constrain the inflation. Monetary policy is the subject of Chapter 12.

When changes in the saving–consumption schedules occur, they will have similar effects. If households want to consume more (save less) at each level of GDP, the aggregate expenditures schedule will shift upwards and the saving schedule downwards in Figures 7.1(a) and (b) respectively. In either portrayal, these shifts will mean an increase in the equilibrium GDP. If households want to consume less (save more) at each possible GDP, the resulting drop in the consumption schedule and the increase in the saving schedule will in turn reduce the equilibrium GDP.

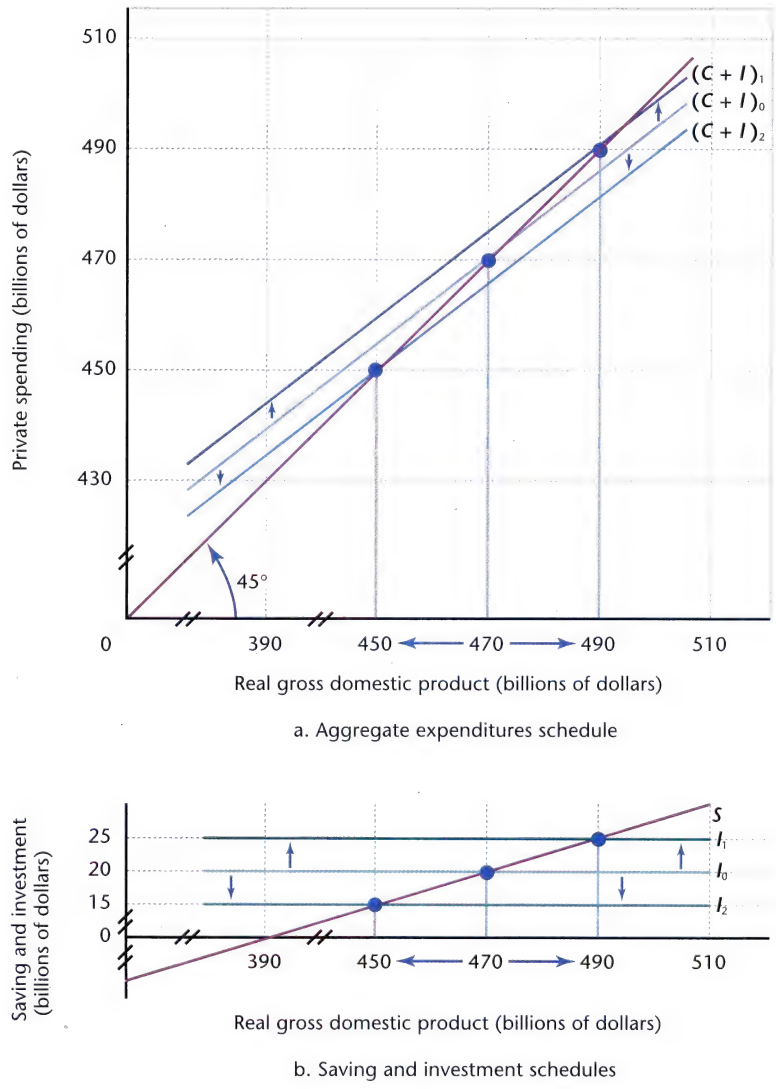


FIGURE 7.1
Changes in the equilibrium GDP caused by shifts in (a) the aggregate expenditures schedule and (b) the investment schedule

An upshift in the aggregate expenditures schedule from, $(C + I)_0$ to $(C + I)_1$ will increase the equilibrium level of GDP. Conversely, a downshift in the aggregate expenditures schedule from, say, $(C + I)_0$ to $(C + I)_2$ will lower the equilibrium GDP. In the saving–investment figure an upshift in the investment schedule (I_0 to I_1) will raise, and a downshift (I_0 to I_2) will lower, the equilibrium GDP.

THE MULTIPLIER EFFECT

Multiplier effect: the result that a change in investment (or other autonomous) spending gives rise to a larger change in the output–income level.

The multiplier: the ratio of a change in equilibrium GDP to the original change in investment (or other autonomous) spending that caused that change in real GDP.

You have undoubtedly detected a curious feature of these examples. A $5 billion change in investment expenditures has given rise to a $20 billion change in the output–income level. This surprising result is called the **multiplier effect**. Specifically, the **multiplier** is the ratio of a change in equilibrium GDP to the original change in (investment) expenditures that caused that change in real GDP; that is:

$$\text{multiplier} = \frac{\text{change in real GDP}}{\text{change in investment}}$$

Three points must be made at the outset:

1. The 'initial change in spending' is usually associated with investment spending for the simple reason that investment seems to be the most volatile component of aggregate expenditures. But it is to be emphasised that changes in consumption, government purchases, or exports are also subject to the multiplier effect.
2. The 'initial change in spending' refers to an upshift or downshift in the aggregate expenditures schedule due to an upshift or downshift in one of its components. In Figure 7.1(b) we find that real GDP has increased by $20 billion because the investment schedule shifted upwards by $5 billion from I_0 to I_1. Similarly, an upshift or downshift in the consumption schedule due to a change in one of the non-income determinants of consumption—wealth, the price level, expectations, consumer indebtedness, and so on—can trigger a multiple change in real GDP.
3. Keep in mind, too, that the multiplier works in both directions; that is, a small increase in spending can give rise to a multiple increase in GDP, or a small decrease in spending can be magnified into a much larger decrease in GDP by the multiplier. Note carefully the effects of the shift in $(C + I)_0$ to $(C + I)_1$ or $(C + I)_2$ and I_0 to I_1 or I_2 in both parts of Figure 7.1.

RATIONALE

The multiplier is based on two apparently innocent facts. On the one hand, the economy is characterised by repetitive and continuous flows of expenditures and income, where the dollars spent by Smith are received as income by Jones. On the other hand, any change in income causes both consumption and saving to vary in the same direction as, and by a fraction of, the change in income. It follows from these two facts that an initial change in the rate of spending causes a chain reaction that, although of diminishing importance at each successive step, cumulates to a multiple change in GDP.

ILLUSTRATION

The multiplier effect is illustrated numerically in Table 7.1 for a $5 billion increase in investment expenditures. Graphically, this is the upward shift of the investment schedule from $20 to $25 billion shown in Figure 7.1(b). We assume that the MPC is three-quarters; the MPS is therefore one-quarter. We also assume that the economy is initially in equilibrium at a GDP of $470 billion.

The initial increase in investment generates an equal amount of wage, rent, interest and profit income for the simple reason that spending and receiving income are two sides of the same transaction. How much consumption will be induced by this $5 billion increase in the incomes of households? We find the answer by applying the marginal propensity to consume, three-quarters, to this

change in income. Thus, the $5 billion income increase causes consumption to rise by $3.75 (= 0.75 of $5) billion and saving by $1.25 (= 0.25 of $5) billion. The $3.75 billion that is spent is received by other households as income. They in turn consume three-quarters, or $2.81 billion, of this $3.75 billion and save one-quarter, or $0.94 billion. The $2.81 billion that is consumed flows to still other households as income (third round). This process continues.

Table 7.1 The multiplier: a tabular illustration (hypothetical data)

	Change in income ($ billion)	Change in consumption ($ billion) (MPC = 0.75)	Change in saving ($ billion) (MPS = 0.25)
Assumed increase in investment	5.00	3.75	1.25
Second round	3.75	2.81	0.94
Third round	2.81	2.11	0.70
Fourth round	2.11	1.58	0.53
Fifth round	1.58	1.19	0.39
All other rounds	4.75	3.56	1.19
Totals	**20.00**	**15.00**	**5.00**

Figure 7.2, which is derived from Table 7.1, shows the cumulative effects of the various rounds of the multiplier process. Observe that each round adds an additional amount to national income and GDP (the shaded areas). The cumulation of the additional income in each round—the sum of the shaded areas—constitutes the total change in income or GDP. Though the spending and re-spending effects of the initial increase in investment diminish with each successive round of spending, the cumulative increase in the output–income level will be $20 billion if the process is carried through to the last dollar. The $5 billion increase in investment will therefore increase the equilibrium GDP by $20 billion, from $470 billion to $490 billion. Hence, the multiplier is 4 (= $\frac{\$20 \text{ billion}}{\$5 \text{ billion}}$).

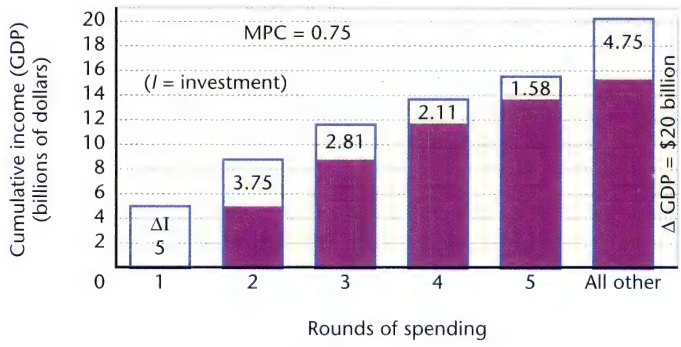


FIGURE 7.2
The multiplier process (MPC = 0.75)

An initial change in investment expenditures of $5 billion creates an equal $5 billion of new income in round 1. Households spend $3.75 billion (= 0.75 × $5 billion) of this new income, creating $3.75 billion of added income in round 2. Of this $3.75 billion of new income, households spend $2.81 billion (= 0.75 × $3.75 billion) and income rises by that amount in round 3. The cumulation of such income increments over the entire process eventually results in a total change of income and GDP of $20 billion. The multiplier is 4 (= $\frac{\$20 \text{ billion}}{\$5 \text{ billion}}$).

It is no coincidence that the multiplier effect ends at the point where exactly enough saving has been generated to offset the initial $5 billion increase in investment expenditures. It is only then that the disequilibrium created by the investment increase will be corrected. In this case, GDP and total incomes must rise by $20 billion to create $5 billion in additional saving to match the $5 billion

increase in investment expenditures. Income must increase by 4 times the initial excess of investment over saving because households save one-quarter of any increase in their incomes. In this example the multiplier—the number of times the ultimate increase in income exceeds the initial increase in investment expenditures—is 4.

THE MULTIPLIER AND THE MARGINAL PROPENSITIES

You may have sensed from Table 7.1 that a relationship of some sort must exist between the MPS and the size of the multiplier. There is such a relationship; the fraction of an increase in income that is saved—that is, the MPS—determines the cumulative re-spending effects of any initial change in *I*, *G*, *NX* or *C*, and, therefore, the multiplier. More specifically, the size of the MPS and the size of multiplier are inversely related; the smaller the fraction of any change in income that is saved, the greater the re-spending at each round and, therefore, the greater the multiplier. If the MPS is one-quarter, as in our example, the multiplier is 4. If the MPS were one-third, the multiplier would be 3. If the MPS were one-fifth, the multiplier would be 5.

Look again at Table 6.4 and Figure 7.1(b). Initially the economy is in equilibrium at the $470 billion level of GDP. Now businesses increase investment by $5 billion so that planned investment of $25 billion exceeds saving of $20 billion at the $470 billion level; that is, $470 billion is obviously no longer the equilibrium GDP. The question is: by how much must gross domestic product or income rise to restore equilibrium? The answer is: by enough to generate $5 billion of additional saving to offset the $5 billion increase in investment.

Because households save $1 out of every $4 of additional income they receive (MPS = 0.25), GDP must obviously rise by $20 billion—4 times the assumed increase in investment—to create the $5 billion of extra saving necessary to restore equilibrium. Hence, a multiplier of 4. If the MPS were one-third, GDP would have to rise to only $15 billion (3 times the increase in investment) to generate $5 billion of additional saving and restore equilibrium, and the multiplier would therefore be 3. But if the MPS were one-fifth, GDP would have to rise by $25 billion for an extra $5 billion of saving to be forthcoming and equilibrium to be restored, yielding a multiplier of 5.

Furthermore, you will recall that the MPS measures the slope of the saving schedule. In terms of the leakages–injections ($S = I$) approach, this means that if the MPS is relatively large (say 0.5) and the slope of the saving schedule is therefore fairly steep (0.5), any given upward shift in investment expenditures will be subject to a relatively small multiplier. For example, a $5 billion increase in investment will entail a new point of intersection of the *S* and *I* schedules only $10 billion to the right of the original equilibrium GDP. The multiplier is only 2. But if the MPS is relatively small (say 0.10), the slope of the saving schedule will be relatively gentle. Therefore, a $5 billion upward shift in the investment schedule will provide a new intersection point some $50 billion to the right of the original equilibrium GDP. The multiplier is 10 in this case. You should verify these examples by drawing appropriate saving and investment diagrams.

We can summarise these and all other possibilities by saying that the multiplier is equal to the reciprocal of the MPS. The reciprocal of any number is the quotient you obtain by dividing 1 by that number. In short, we can say:

$$\text{the multiplier} = \frac{1}{\text{MPS}}$$

This formula gives us a shorthand method of determining the multiplier. All we need to know is the MPS to calculate the size of the multiplier quickly.

You will recall, too, from Chapter 6 that since MPC + MPS = 1, it follows that MPS = 1 − MPC. Therefore, we can also write our multiplier formula as:

$$\text{the multiplier} = \frac{1}{(1 - \text{MPC})}$$

While we have developed our two multiplier formulae intuitively, the underlying arithmetic is easily understood.[1]

SIGNIFICANCE OF THE MULTIPLIER

The significance of the multiplier is self-evident. A relatively small change in the investment plans of businesses or the consumption–saving plans of households can trigger a much larger change in the equilibrium level of GDP. The multiplier magnifies the fluctuations in business activity initiated by changes in expenditures.

As illustrated in Figure 7.3, the larger the MPC (the smaller the MPS), the greater will be the multiplier. For example, if the MPC is 0.75 and the multiplier is therefore 4, a $10 billion decline in investment will reduce the equilibrium GDP by $40 billion. But if the MPC is only two-thirds and the multiplier is then 3, the same $10 billion drop in investment will cause the equilibrium GDP to fall by only $30 billion. This makes sense intuitively—a large MPC means the chain of induced consumption shown in Figure 7.2 dampens down slowly and cumulates to a large change in income. Conversely, a small MPC causes induced consumption to decline quickly, so the cumulative change in income is small. Incidentally, we will find, in discussing the so-called built-in stabilisers in Chapter 9, that one of the major goals of public policy is to structure a system of taxes and transfer payments that reduce the MPC and diminish the size of the multiplier, so lessening the destabilising effect of a given change in investment or consumption or government expenditures.

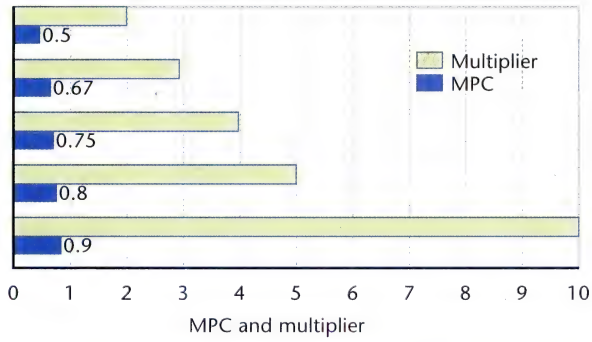


FIGURE 7.3
The MPC and the multiplier

The larger the MPC (the smaller the MPS), the greater is the multiplier.

THE SIMPLE MULTIPLIER AND EXTENSIONS OF THE MULTIPLIER

Simple multiplier: the multiplier based upon the private closed model of the economy, where the $\frac{1}{\text{MPS}}$ formulation reflects only the leakage of saving.

The multiplier concept, as presented here, is sometimes called the **simple multiplier** for the obvious reason that it is based upon a very simple model of the economy. In terms of the $\frac{1}{\text{MPS}}$ formulation, the simple multiplier reflects only the leakage of saving. But, as noted earlier, in the real world successive rounds of income and expenditures can also be dampened down by other leakages in the form of taxes and imports; that is, in addition to the leakage into saving, some portion of income at each round would be siphoned off as additional taxes, and another part would be used to purchase additional goods from overseas. The result of these additional leakages is that the $\frac{1}{\text{MPS}}$ statement of the multiplier can be generalised. This is achieved by changing the denominator to read 'fraction of the change in income that is not spent on domestic output' or 'fraction of the change in income that leaks, or is diverted, from the income–expenditure stream'—put most simply, $\frac{1}{\text{leakages}}$. We will study these additional leakages later in this chapter.

Concept Highlights

- Shifts in the saving–consumption schedules or in the investment schedule will cause the equilibrium output–income level to change by an amount equal to a multiple of the amount of the initial change in spending.
- The phenomenon of the multiplied impact on output that accompanies both increases and decreases in spending is often referred to as the multiplier effect. *The multiplier is the ratio of the change in equilibrium GDP* to *the initial change in expenditures that caused the change in final incomes.* The simple multiplier is equal to the reciprocal of the marginal propensity to save (MPS).
- The multiplier is based on the fact that initial increases in aggregate expenditures will induce successive rounds of increased expenditure. These take the form of additional consumption expenditures, based on the additions to income implied by increases to aggregate expenditures. Initial decreases in aggregate expenditures will lead to rounds of induced decreases in consumption expenditure and a fall in incomes and output.

EQUILIBRIUM VERSUS FULL-EMPLOYMENT GDP

We now turn from the task of explaining to that of evaluating the equilibrium GDP.

Too much emphasis cannot be placed on the fact that the $470 billion equilibrium GDP embodied in our analysis (Table 6.4 and Figures 6.8 and 6.9) may or may not entail full employment.

Remember—the basic result associated with the aggregate expenditures analysis is that capitalism contains no mechanisms capable of automatically creating that particular level of aggregate expenditure that will induce businesses to produce a full-employment, non-inflationary level of output. The aggregate expenditures schedule might well lie above or below that point that intersects the 45-degree line at the full-employment, non-inflationary level of output.

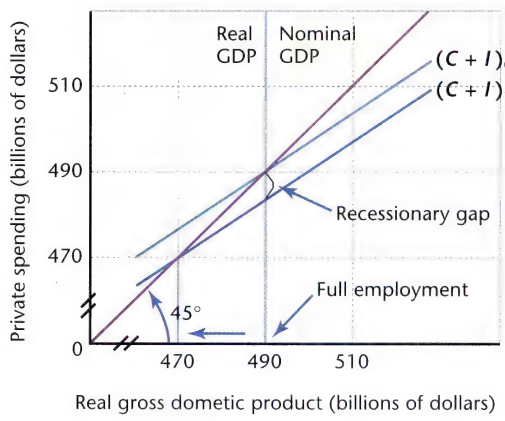
RECESSIONARY GAP

Recessionary gap: the amount by which aggregate expenditures are deficient to that required to generate the full-employment level of GDP. This deficiency of aggregate expenditures produces a contractionary or depressing impact upon the economy.

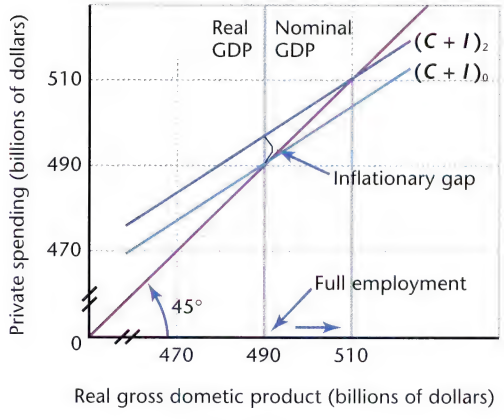
Let us assume in Figure 7.4(a) that the full-employment, non-inflationary level of output is $490 billion. Suppose, too, that the aggregate expenditures schedule is at $(C + I)_1$ which, incidentally, happens to be the aggregate expenditures schedule developed and employed in this chapter. This schedule intersects the 45-degree line to the left of the full-employment output, causing the economy's aggregate production to fall $20 billion short of its capacity production. In terms of Table 6.4, the economy is failing to employ 0.5 million of its 7.0 million available workers and, as a result, is sacrificing $20 billion worth of output.

The amount by which aggregate expenditures fall short of the full-employment level of GDP is called the **recessionary gap** because this deficiency of spending has a contractionary or depressing impact upon the economy. In this case, note in Table 6.4 that, assuming the full-employment GDP to be $490 billion, the corresponding level of total expenditures is only $485 billion. Hence, the recessionary gap is $5 billion. In other words, the recessionary gap is the amount by which the aggregate expenditures schedule would have to shift upwards to realise the full-employment, non-inflationary GDP. Graphically, the recessionary gap is the vertical distance by which the aggregate expenditures schedule $(C + I)_1$ falls short of the full-employment point on the 45-degree line.

Because the relevant multiplier is 4, we observe that there is a $20 billion differential (equal to the recessionary gap of $5 billion times the multiplier of 4) between the equilibrium GDP and the full-employment GDP. This $20 billion gap is the GDP gap that we encountered in Chapter 5.



a. Recessionary gap



b. Inflationary gap

FIGURE 7.4
Recessionary and inflationary gaps

The equilibrium and full-employment GDPs may not coincide. A recessionary gap, shown in (a), is the amount by which aggregate expenditures fall short of the full-employment GDP. It will cause a multiple decline in real GDP. The inflationary gap in (b) is the amount by which aggregate expenditure exceeds the full-employment level of GDP. This gap will cause a multiple increase in nominal GDP.

INFLATIONARY GAP

Inflationary gap: the amount by which aggregate spending exceeds that required to achieve the full-employment level of GDP. This excess of aggregate expenditures produces an inflationary impact upon the economy.

If aggregate expenditure happens to be at $(C + I)_2$ in Figure 7.4(b), a demand-pull inflationary gap will exist. Specifically, the amount by which aggregate spending exceeds the full-employment level of GDP is called an **inflationary gap**. In this case, a $5 billion inflationary gap is assumed to exist, as shown by the vertical distance between $(C + I)_2$ and the full-employment point on the 45-degree line; that is, the inflationary gap is the amount by which the aggregate expenditures schedule would have to shift downwards to realise the full-employment, non-inflationary GDP.

The effect of this inflationary gap—this excess demand—is to pull up the prices on the economy's fixed physical volume of production. Businesses as a whole cannot respond to the $5 billion in excess demand by expanding their real outputs, so demand-pull inflation occurs.

Business IMPLICATION EXPECTED PROFITS AND INVESTMENT

Introductory economics texts often focus on interest rates as a determinant of the level of investment. Although interest rates are important, we shouldn't ignore the importance of investors' expectations of future profits—another of the determinants of investment.

The importance of expected future profits to investors is reflected in a number of events in early 2000. The first was the crash of many of the new 'dot.com' stocks. The second was the inability of many newcomers to the high-technology area to offer shares to investors at what their managers considered to be a 'fair' price—the companies' management withdrew their initial public offerings (IPOs) from the market.

What were the reasons behind these 'failures' to attract investors' funds? To start with, there was a general fall in the level of expected company profits due to rising interest rates (we can, thankfully, link interest rates to profit expectations). Mainly, however, there was a growing perception among investors that the levels of profit to be realistically expected in the future from these companies were not going to get near the initial levels projected. Worse still, many of these companies were going to require much larger amounts of investment funds to ensure that they developed, and would incur losses for many years before profits were to be generated.

The implication: although expected profits are only *expected*, investors need to be confident that profits will be delivered to maintain their investment.

SIMPLIFICATIONS, COMPLICATIONS AND POLICY

The astute reader may have sensed that our definitions of the recessionary and inflationary gaps rely upon a simplification—that a full-employment, non-inflationary level of GDP is attainable! Our earlier simplified discussion of the aggregate supply curve (Figure 5.5 and Chapter 5) suggests this is not likely to be the case. The intermediate range of the curve precludes the realisation of the full-employment, non-inflationary output. To permit uncluttered definitions of the recessionary and inflationary gaps we have presumed an aggregate supply curve that eliminates the intermediate range and includes only ranges 1 and 3. We have—through our assumption that considerable slack exists in the economy—been operating in range 1.

It is also important to recognise that our aggregate expenditures treatment of the inflationary gap poses some complications. Specifically, Figure 7.4(b) implies that our $5 billion inflationary gap, subject to a multiplier of 4, will simply cause money or nominal GDP to rise by $20 billion (to $510 billion) while real GDP remains unchanged at $490 billion.

To portray this outcome in Figure 7.4(b), we must modify our horizontal axis so that it measures real GDP up to the $490 billion full-employment output and money GDP for all higher levels of GDP. In other words, to the left of the $490 billion GDP, changes in GDP are real changes, and to the right, changes in GDP entail nominal or money changes.[2]

Concept highlights

- The message of the aggregate expenditures model is that the equilibrium level of real GDP and the full-employment, non-inflationary level of real GDP need not coincide.
- Where equilibrium real GDP occurs below the full-employment level, the amount by which aggregate expenditures fall short of the full-employment GDP is called the recessionary gap. A recessionary gap in expenditures is reflected in an equilibrium real GDP that lies a multiple amount—as determined by the multiplier—below the full-employment level of real GDP.
- The amount by which aggregate expenditures exceed those required to achieve the full-employment level of real GDP is the inflationary gap. An inflationary gap causes demand-pull inflation.

DISCRETIONARY FISCAL POLICY

Discretionary fiscal policy: the deliberate manipulation of taxes and spending by government for the purpose of altering real GDP and employment, controlling inflation and stimulating economic growth.

Let us now add the government sector to our aggregate expenditures model. We will focus our attention on **discretionary fiscal policy**. This is the deliberate manipulation of taxes and spending by government for the purpose of altering real output and employment, controlling inflation and stimulating economic growth. The implications of non-discretionary elements of fiscal policy—that is, the degree to which government spending and taxes alter with GDP—is a topic of Chapter 9.

SIMPLIFYING ASSUMPTIONS

To keep a potentially complex discussion as clear as possible, the following simplifying assumptions are invoked:

1. In our analysis, we continue to employ the simplified investment schedule where the level of investment is independent of the level of GDP (autonomous investment).
2. We suppose that the initial impact of government purchases is such that it neither depresses nor stimulates private spending; that is, government purchases will not cause any upward or downward shifts in the consumption and investment schedules.
3. We presume that the government's net tax revenues[3] are derived entirely from personal taxes. The significance of this is that, although DI will fall short of HI by the amount of government's tax revenues, GDP, NI and HI will remain equal.
4. We assume initially that a fixed amount of taxes is collected regardless of the level of GDP.
5. Initially we will continue to assume that the price level is constant.
6. Finally, we assume that the impact of fiscal policy is confined to the demand side of the macroeconomy; there are presumably no intended or unintended effects upon our capacity to produce.

These assumptions will permit us to achieve a simple and uncluttered grasp of how changes in government expenditures and taxes influence the economy.

Most of these assumptions will be dropped as we examine the complications and shortcomings that fiscal policy often encounters in the real world.

In our discussion of the private sector of the economy, we implicitly assumed that government purchases of goods and services (G) and tax revenues (T) were both zero. Now let us suppose that G and T both increase from zero to, say, $20 billion, noting the impact of each and then the combined impact of the two. As before, we pursue our analysis in both graphical and tabular forms.

GOVERNMENT PURCHASES AND EQUILIBRIUM GDP

Suppose that government decides to purchase $20 billion worth of goods and services, regardless of what the level of GDP might be. Table 7.2 shows the impact on the equilibrium GDP in terms of simple arithmetic data. Columns 1–4 are carried over from Table 6.4 for the private economy, where, you might recall, the equilibrium GDP was $470 billion. The only new element is the addition of government purchases in column 5. By adding government expenditures to private expenditures ($C + I$), we get a new higher level of aggregate expenditures, as shown in column 6. Comparing columns 1 and 6, we find that aggregate expenditures and domestic output are equal at a higher level of GDP. Specifically, equilibrium GDP has increased from $470 to $550 billion.[4] Increases in public expenditures, like increases in private expenditures, will boost the aggregate expenditures schedule in relation to the 45-degree line and result in a higher equilibrium GDP. Note, too, that government spending is subject to the multiplier. A $20 billion increase in government purchases has increased equilibrium GDP by $80 billion.

It is important to stress that this increase in government spending is not financed by increased tax revenues. We will soon find that increased taxes reduce the equilibrium GDP. Stated differently, government spending must entail budget deficits to have the expansionary impact just described. Indeed, the basic policy recommendation of the famous economist Keynes was to use deficit spending by government to overcome recession or depression.

In terms of the leakages–injections approach, government purchases, like investment, are an injection of spending. Recall that the leakage of saving causes consumption to fall short of disposable income, causing a potential spending gap.

Table 7.2 The impact of government purchases on equilibrium GDP (hypothetical data)

(1) Real domestic output and income GDP = DI ($ billion)	(2) Consumption C ($ billion)	(3) Saving S ($ billion)	(4) Investment I ($ billion)	(5) Government purchases G ($ billion)	(6) Aggregate expenditures (C + I + G) or (2) + (4) + (5) ($ billion)
370	375	–5	20	20	415
390	390	0	20	20	430
410	405	5	20	20	445
430	420	10	20	20	460
450	435	15	20	20	475
470	450	20	20	20	490
490	465	25	20	20	505
510	480	30	20	20	520
530	495	35	20	20	535
550	**510**	**40**	**20**	**20**	**550**

This gap may be filled by injections of both investment and government purchases. Observe in Table 7.2 that the $550 billion equilibrium level of GDP occurs where $S = I + G$.

Figure 7.5 shows the impact of government purchases graphically. In Figure 7.5(a) we simply add government purchases, G, vertically to the level of private spending, $C + I$. As a result, the aggregate expenditures schedule (private plus public) has been increased to $C + I + G$, resulting in the indicated $80 billion increase in equilibrium GDP. Figure 7.5(b) shows the same change in the equilibrium GDP in terms of the leakages–injections approach.

Like investment, government spending is an offset to the leakage of saving. Hence, with G added to our discussion, the equilibrium level of GDP is now determined at the point where the amount households save is offset exactly by the amount that businesses plan to invest plus the amount government desires to spend on goods and services; that is, the equilibrium GDP is determined by the intersection of the S schedule and the $I + G$ schedule. Note that either approach indicates the same new equilibrium GDP.

What of the effect of a decline in government expenditures? Obviously, a decline in G will cause the aggregate expenditures schedule to fall in Figure 7.5(a) and the $I + G$ schedule to fall in Figure 7.5(b). In either case the result is a multiple decline in the equilibrium GDP.

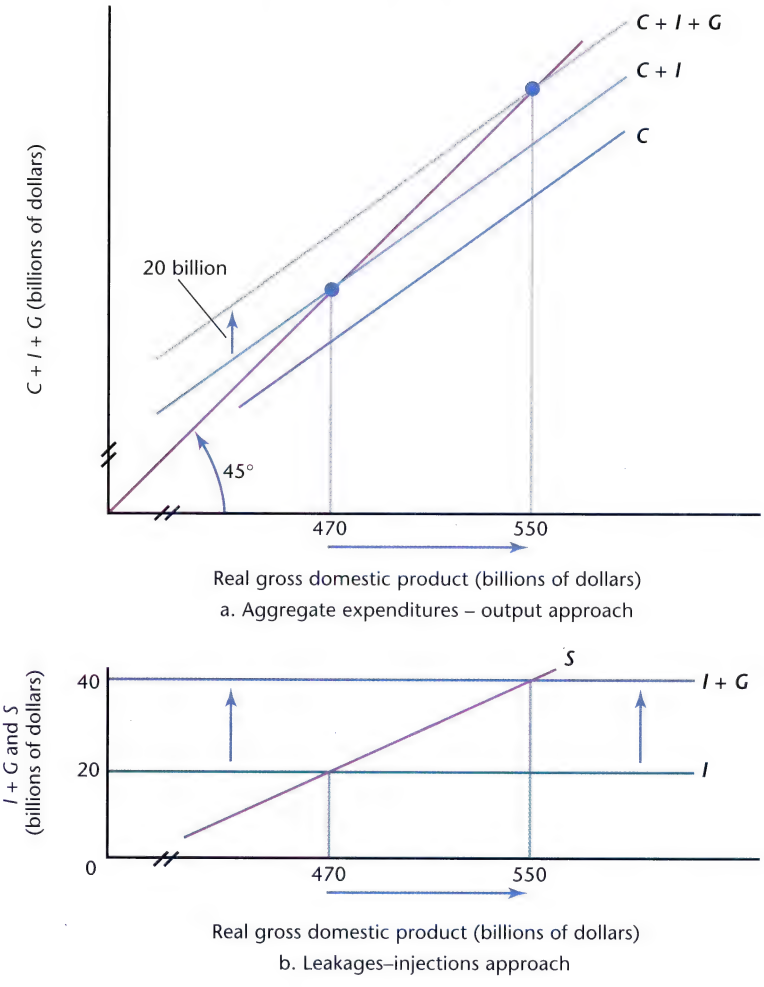


FIGURE 7.5
Government expenditures and the equilibrium GDP

(a) Aggregate expenditures – output approach: The addition of government expenditures, G, to our analysis raises the expenditures ($C + I + G$) schedule and increases the equilibrium level of GDP, as would an increase in C or I. Note that changes in government expenditures are subject to the multiplier effect. (b) Leakages–injections approach: In terms of the leakages–injections approach, government expenditures supplements private investment expenditures ($I + G$), increasing the equilibrium GDP.

Global SNAPSHOT THE INVESTMENT–INCOME RELATIONSHIP

High rates of investment should lead to strong growth in GDP. This is due to the importance of investment as a component of GDP and its role in increasing the productive capacity and productivity of the economy. Here we examine the relationship between the annual average rates of growth of GDP and investment expenditures over the 1990–97 period for a number of countries and regions.

Country	Annual average growth rate (%) Gross domestic product	Gross domestic investment expenditures
Australia	3.7	5.4
Canada	2.1	1.5
China, mainland	11.9	14.2
China, Hong Kong SAR	5.3	11.1
France	1.3	−2.0
India	5.9	8.4
Italy	1.1	−1.9
Japan	1.4	0.5
Mexico	1.8	1.7
Norway	3.9	4.1
Russian Federation	−9.0	−14.9
Switzerland	−0.1	−0.9
United Kingdom	1.9	1.4
United States	2.5	5.8
World	**2.3**	**2.4**

SOURCE: World Bank, 1999 World Development Indicators *and* World Development Report 1998/99.

Questions

1. Graph the data plotting average annual growth in gross domestic investment expenditures against the annual average growth in GDP.
2. Examining your graph, do you observe the relationship between the two variables that you would expect? Explain.
3. Referring to your analysis of the consumption–income relationship in Global Snapshot, Chapter 6, would you say that the investment–income relationship or consumption–income relationship is more exact? Explain.
4. What other relationships might be present between consumption, investment and GDP growth? Explain.

TAXATION AND EQUILIBRIUM GDP

Lump-sum tax: a tax that collects the same amount of tax revenue, the lump sum, at each level of GDP.

Government also collects tax revenues. How do tax collections affect the equilibrium level of GDP? To answer this question in the simplest way, we will assume that government imposes a **lump-sum tax**—a tax that collects the same amount of tax revenue at each level of GDP.[5] Let us assume the lump-sum tax is $20 billion; the government now collects $20 billion of taxes at every level of GDP. What is the impact of the government's increasing tax collections from zero to $20 billion at each level of GDP?

Table 7.3 is relevant. Taxes are inserted as column 2 and we note in column 3 that disposable income (after-tax income) is obviously less than GDP by the amount of the taxes. DI has been reduced by $20 billion—the amount of taxes—at each level of GDP. And, because DI is made up of consumer expenditures and saving, we can expect saving. But by how much will each decline? The MPC and the MPS hold the answer—the MPC tells us what fraction of a decline in DI will come at the expense of consumption, and the MPS indicates what fraction of a drop in DI will come at the expense of saving. By observing that the MPC equals three-quarters and the MPS equals one-quarter, we can conclude that if government collects $20 billion in taxes at each possible level of GDP, the amount of consumption forthcoming at each level of GDP will drop by $15 billion (three-quarters of $20 billion), and the amount of saving at each level of GDP will fall by $5 billion (one-quarter of $20 billion).

Table 7.3 Determination of the equilibrium levels of employment, output and income: private and public sectors (hypothetical data)

(1) Real domestic output and income (GDP = NI = HI) ($ billion)	(2) Taxes *T* ($ billion)	(3) Possible levels of disposable income ($ billion) (1) – (2)	(4) Consumption *C* ($ billion)
370	20	350	360
390	20	370	375
410	20	390	390
430	20	410	405
450	20	430	420
470	20	450	435
490	**20**	**470**	**450**
510	20	490	465
530	20	510	480

(5) Saving *S* ($ billion)	(6) Investment *I* ($ billion)	(7) Government purchases *G* ($ billion)	(8) Aggregate expenditures (*C* + *I* + *G*) or (2) + (4) + (5) ($ billion)
–10	20	20	400
–5	20	20	415
0	20	20	430
5	20	20	445
10	20	20	460
15	20	20	475
20	**20**	**20**	**490**
25	20	20	505
30	20	20	520

Our conclusions are confirmed by an examination of columns 4 and 5 of Table 7.3. Note that the amounts of consumption and saving at each level of

GDP are \$15 billion and \$5 billion smaller, respectively, than their corresponding values in Table 7.2. Thus, for example, before the imposition of taxes, where GDP equalled DI, consumption was \$420 billion and saving \$10 billion at the \$430 billion level of GDP (Table 7.2). After taxes are imposed, DI is \$410 billion, obviously \$20 billion short of the \$430 billion level of GDP, with the result that consumption is only \$405 billion and saving is \$5 billion (Table 7.3).

To summarise—taxes cause DI to fall short of GDP by the amount of the taxes. This decline in DI in turn causes both consumption and saving to be less at each level of GDP. The sizes of the declines in C and S are determined by the MPC and the MPS. Specifically, multiply the tax increase (\$20 billion) by the MPC (three-quarters) to determine the decrease in consumption (\$15 billion). Similarly, multiply the tax increase (\$20 billion) by the MPS (one-quarter) to determine the decrease in saving (\$5 billion).

What is the effect upon equilibrium GDP? We calculate aggregate expenditures once again, as shown in column 8 of Table 7.3. Note that aggregate expenditures is \$15 billion less at each level of output than it was in Table 7.2. The reason, of course, is that after-tax consumption, C_a, is \$15 billion less at each level of GDP. Comparing total output and aggregate expenditures in columns 1 and 8, it is apparent that the aggregate amounts produced and purchased are equal only at the \$490 billion GDP. You will observe that the imposition of a \$20 billion lump-sum tax has caused equilibrium GDP to fall from \$550 billion (Table 7.2) to \$490 billion (Table 7.3).

Our alternative leakages–injections approach confirms this result. Taxes, like savings, are a leakage from the income–expenditures stream. Saving and paying taxes are both non-consumption uses of income. Consumption will now fall short of total output—so creating a potential spending gap—in the amount of after-tax saving plus taxes. This gap may be filled by planned investment and government purchases. Hence, our new equilibrium condition for the leakages–injection approach is as follows: after-tax saving (S_a) plus taxes equals planned investment plus government purchases. Symbolically, $S_a + T = I + G$. You should verify in Table 7.3 that this equality of leakages and injections is fulfilled only at the \$490 billion GDP.

The impact of a \$20 billion increase in taxes is shown graphically in Figure 7.6. In Figure 7.6(a) the \$20 billion increase in taxes shows up as a \$15 billion decline in the aggregate expenditure ($C + I + G$) schedule. Under our simplifying assumption that all taxes are personal income taxes, this decline in aggregate expenditure is solely the result of a decline in the consumption component of the aggregate spending schedule. The equilibrium GDP shifts from \$550 billion to the \$490 billion level as a result of this tax-caused drop in consumption. To generalise—increases in taxes will lower the aggregate expenditures schedule relative to the 45-degree line and cause the equilibrium GDP to fall.

Consider now the leakages–injections approach shown in Figure 7.6(b)—the analysis here is slightly more complex because the imposition of \$20 billion in taxes has a twofold effect. First, the taxes reduce DI by \$20 billion and, with the MPS at one-quarter, cause saving to fall by \$5 billion at each level of GDP. In Figure 7.6(b) this is shown as a shift from S (saving before taxes) to S_a (saving after taxes). Second, the \$20 billion in taxes as such appear as a \$20 billion additional leakage at each GDP level, which must be added to S_a (not S), giving us $S_a + T$. Equilibrium now exists at the \$490 billion GDP, where the total amount households save plus the amount of taxes government intends to collect are equal to the total amount businesses plan to invest plus the amount of government purchases. The equilibrium condition for the leakages–injections approach now is $S_a + T = I + G$. Graphically, it is the intersection of the $S_a + T$ and the $I + G$ schedules that determines the equilibrium GDP.

A decline in existing taxes will cause the aggregate expenditures schedule to rise as a result of an upward shift in the consumption schedule in Figure 7.6(a). In terms of Figure 7.6(b) a tax cut will cause a decline in the $S_a + T$ schedule. The result in either case is a multiple increase in the equilibrium GDP.

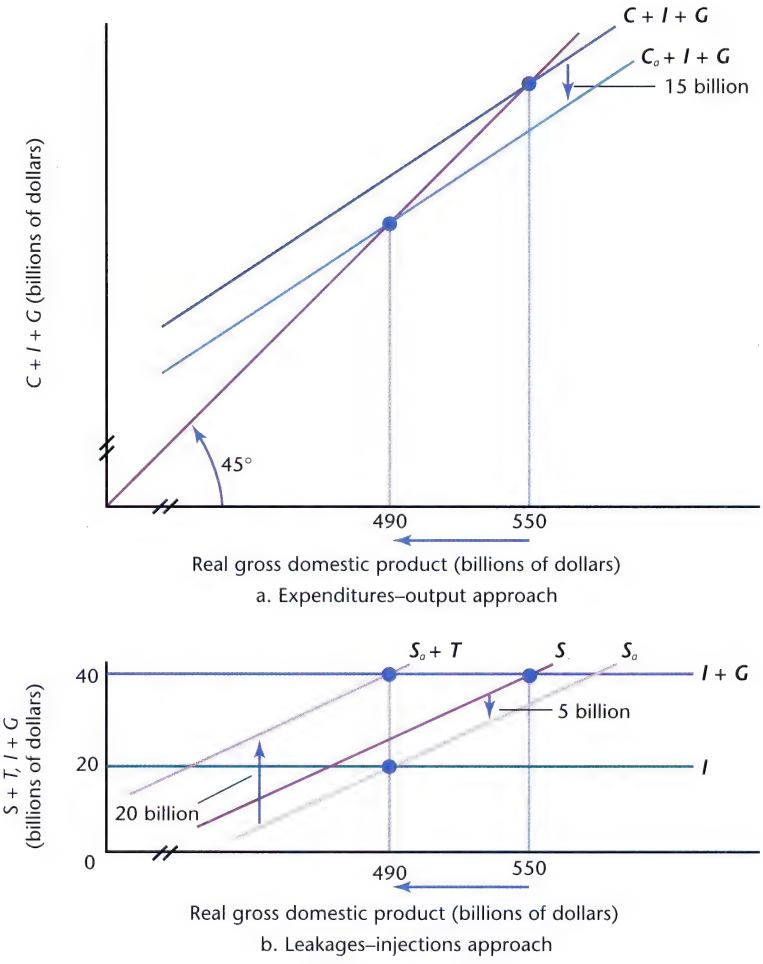


FIGURE 7.6
Taxes and the equilibrium GDP

(a) Expenditures–output approach: If the MPC is three-quarters, the imposition of $20 billion of taxes will lower the consumption schedule by $15 billion and thereby cause a decline in the equilibrium GDP. (b) Leakages–injections approach: Here taxes have a twofold effect. First, with an MPS of one-quarter, the imposition of taxes of $20 billion will reduce disposable income by $20 billion and saving by $5 billion at each level of GDP. This is shown by the shift from S (saving before taxes) to S_a (saving after taxes). Second, the $20 billion of taxes constitute an additional $20 billion leakage at each GDP level, giving us $S_a + T$. By adding government, the equilibrium condition changes from $S = I$ to $S_a + T = I + G$.

FISCAL POLICY OVER THE BUSINESS CYCLE

Expansionary fiscal policy: discretionary budgetary policy that increases government spending, lowers taxes, or combines these actions, to assist the economy to recover from recession or depression.

Our discussion clearly suggests how fiscal policy might be used to help stabilise the economy. The fundamental purpose of fiscal policy is to eliminate a recessionary or an inflationary gap. When a recessionary gap (Figure 7.4(a)) exists, an **expansionary fiscal policy** is in order. This entails:

1. increased government spending,
2. lower taxes, or
3. a combination of the two.

Contractionary fiscal policy: discretionary budgetary policy that decreases government spending, increases taxes, or combines these actions, to reduce or eliminate inflationary pressures in the economy.

In other words, if the budget is balanced at the outset, fiscal policy should move in the direction of a government budget deficit during a recession or depression.

Conversely, when demand-pull inflation is prevalent, a restrictive or **contractionary fiscal policy** is appropriate. A contractionary policy is composed of:

1. decreased government spending, or
2. higher taxes, or
3. a combination of these two policies.

Fiscal policy should move towards a surplus in the government's budget when the economy is faced with the problem of controlling inflation.[6]

Keep in mind, however, that not only does the difference between government spending and taxes (the size of a deficit or surplus) affect the GDP, but so does the absolute size of the budget. In our balanced-budget multiplier illustration, increases in G and T of \$20 billion increased GDP by \$20 billion. If G and T had both increased by only \$10 billion, equilibrium GDP would have risen by only \$10 billion.

THE MULTIPLIER AND FISCAL POLICY

Recall that for the private, closed economy the multiplier is $\frac{1}{\text{MPS}}$ or, for our data, $\frac{1}{0.25}$, or 4. In other words, the multiplier is the reciprocal of the MPS, where we define the MPS as the fraction of any change in national income that 'leaks' into saving.

Now, in moving to an economy with both a private and a public sector, we add a second leakage in the form of taxation. In our discussion of taxes, however, we assumed they took the form of lump-sum taxes (T_{LS}). While this is undoubtedly true for some components of taxation, it is more likely that a vast amount of tax is sensitive to changes in income in the economy (see Chapter 9). We can thus consider that taxes (T) will be based partly on incomes, with the tax function taking a form something like the following:

$$T = T_{LS} + \text{MPT}(Y)$$

Here MPT indicates the marginal propensity to tax, while Y indicates real GDP.

Saving and taxes are similar in that both are ways of disposing of income other than spending it. However, there is one complication. The MPS will determine the amount that will be saved out of post-tax incomes. Thus the MPS will interact with the MPT in determining the sensitivity of leakages from income to changes in its level. We can add the impact of the MPT to the MPS in the denominator of the multiplier formula so that the multiplier becomes (see the appendix to this chapter):

$$\frac{1}{[\text{MPT} + \text{MPS}(1 - \text{MPT})]}$$

Note that because taxes entail another leakage from the domestic income–expenditures stream, the introduction of marginal taxation reduces the size of the multiplier. This is due to the fact that taxes operate on pre-tax income while consumption and saving operate on post-tax income. Taxes from income reduce the ability to consume and save from each marginal unit of income.

Concept highlights

- The addition of government to the aggregate expenditures model means that we need to consider both an additional leakage from the expenditures flow—taxes—and an additional injection into the flow—government spending.
- Increases in government expenditures expand, and decreases in government expenditures contract, the equilibrium GDP. Conversely, increases in taxes reduce, and decreases in taxes expand, the equilibrium GDP.
- Appropriate fiscal policy to correct for unemployment entails increases in government expenditures and decreases in taxes—that is, a budget deficit. Decreases in government expenditures and increases in taxes—that is, a budget surplus—are appropriate fiscal policy for correcting demand-pull inflation.
- The introduction of marginal taxes reduces the size of the multiplier by providing another income-sensitive leakage from the expenditures flow in the economy.

Business IMPLICATION — WHY WOULD A GOVERNMENT FUND THE GRAND PRIX?

Why did Adelaide fight so hard to get the Australian Grand Prix (GP), and then Melbourne fight so hard to wrest it from Adelaide? Given the high cost to taxpayers of staging these events, there need to be some obvious benefits, of both a tangible and intangible nature.

An answer to why the Australian GP might be attractive to state governments lies in an understanding of the multiplier process. Although requiring expenditures by the respective state governments to manage the staging of the event, the GP brings significant increases in consumer expenditures. Estimates of the induced increases in consumption expenditure that result from the running of the GP suggest that the multiplier is greater than one—output and income expand by more than the initial expenditure by government. Thus, tangible benefits include a boost to business demand, and extra state taxes and licensing fees paid. The GP also acts as a marketing vehicle promoting the state as a tourist destination—a positive, although intangible, benefit. Regardless of their political perspective, an implication of this for many is that not all government involvement in business activity is inappropriate.

MACROECONOMIC EFFECTS OF FOREIGN TRADE

We will now explore the macroeconomic effects of international trade on the aggregate expenditures model; therefore, we will relax the assumption that our economy is 'closed'. Trade, we will show, alters aggregate expenditures and thereby the levels of output, income and employment. If world trade increases a nation's aggregate expenditures, the effect will obviously be expansionary and the levels of employment, income and prices will tend to rise. If trade diminishes aggregate expenditures, the impact can be contractionary.

Let us now incorporate exports and imports into the aggregate expenditures model we have developed.

NET EXPORTS AND AGGREGATE EXPENDITURES

First, consider exports. You will recall from Chapter 4 that—like consumption, investment and government purchases—exports (X) give rise to domestic production, income and employment. Even though the goods and services produced in response to such spending flow abroad, foreign spending on Australian goods increases production and creates jobs and incomes in Australia. Exports must therefore be added as a new component of aggregate expenditures. Conversely, when an economy is open we must recognise that a portion of its consumption, investment and government expenditures will be on imports (M). Hence, in order not to overstate the value of domestic production, we must in effect reduce the sum of consumption, investment and government expenditures for the portions spent on imports. In brief, for a non-trading or closed economy, aggregate expenditures are $C + I + G$. But for an open economy, aggregate expenditures is $C + I + G + (X - M)$. Or, recalling from Chapter 4 that net exports (NX) equals $(X - M)$, we can say that aggregate expenditure for an open economy is $C + I + G + NX$.

Now we must ask: what determines the volumes of a nation's exports and imports? What determines whether the net export figure added to the aggregate expenditures is positive or negative? The answers are complex. The basic considerations are comparative costs and the terms of trade (see Chapter 2). Trade barriers can also be significant. But given these considerations, the volume of Australian exports will depend primarily and directly upon the levels of incomes in foreign nations; that is, if our major trading partners are prosperous, they will purchase much from us and Australian exports will be relatively large. But if these economies are depressed, their purchases from Australia—Australian exports—will be relatively small. Note that Australian exports are independent of the level of domestic income. On the other hand, it is reasonable to assume that any nation's imports will vary directly with domestic income in the same general fashion as does domestic consumption; that is, as our gross domestic product (GDP) rises, we can expect households to buy not only Holdens and more brandy, but also more Ferraris and more imported cognac.

EXPORTS, IMPORTS AND GDP

Let us now add exports and imports to our discussion of income determination as presented so far. Columns 1 and 2 of Table 7.4 merely repeat columns 1 and 9 from Table 7.3 where the equilibrium GDP for a closed economy was $490 billion. In column 3, we have added exports of $30 billion, which are dependent upon the incomes of foreign countries and therefore independent of GDP. Imports are added in column 4; it is assumed that imports increase by $2 billion for every $20 billion increase in national income. Column 5 combines exports and imports to show net exports. In column 6, we have adjusted the domestic aggregate expenditures of column 2 for net exports, giving us aggregate expenditures for an open economy.

The particular export and import figures we have selected are such that foreign trade leaves the equilibrium GDP unchanged; that is, net exports are zero at the closed economy's equilibrium GDP of $490 billion, so aggregate expenditures for the open economy (column 6) equal output (column 1) at $490 billion. Figure 7.7 portrays these results graphically. The $C + I + G$ schedule is aggregate expenditures for the closed economy, plotted from column 2 of Table 7.4. The $(C + I + G + NX)_0$ schedule is aggregate expenditures for the open economy and reflects the figures of column 6. You will observe that in this case aggregate

expenditures for the open economy equal domestic output at the same point, as do aggregate expenditures for the closed economy, and therefore the $490 billion equilibrium GDP is unaltered by world trade.

But there is no reason why net exports will have a neutral effect on equilibrium GDP. For example, by either reducing exports by $7 billion (from $30 to $23 billion) or increasing imports by $7 billion at each level of GDP, we would find that net exports would be minus $7 billion at the $490 billion GDP. Recalculating aggregate expenditures in column 6 of Table 7.4, we see that the resulting new equilibrium GDP will be $470 billion. Graphically, the net open-economy aggregate expenditures schedule is shown by $(C + I + G + NX)_1$ in Figure 7.7. This schedule lies $7 billion below $(C + I + G + NX)_0$, reflecting the assumed $7 billion decline in net exports. Hence, at the original $490 billion equilibrium GDP, a contractionary gap of $7 billion exists, which causes the equilibrium GDP to decline to $470 billion.

Conversely, by either increasing exports by $7 billion (from $30 to $37 billion) or decreasing imports by $7 billion at each GDP level, we discover that net exports are now plus $7 billion at the original $490 billion GDP. Again, the recalculation of aggregate expenditures in column 6 of Table 7.4 reveals that the equilibrium GDP will shift from $490 to $510 billion. In Figure 7.7 the new open economy aggregate expenditures line is $(C + I + G + NX)_2$, which lies $7 billion above $(C + I + G + NX)_0$, because of the assumed $7 billion increase in net exports. This creates a $7 billion inflationary gap at the original $490 billion equilibrium GDP, and, as a result, the equilibrium GDP increases to $510 billion.[7]

The generalisations that can be distilled from these examples are quite obvious. A decline in net exports—that is, a decrease in exports or an increase in imports—decreases aggregate expenditures and has a contractionary effect on GDP. Conversely, an increase in net exports—the result of either an increase in exports or a decrease in imports—increases aggregate expenditures and has an expansionary effect on GDP.

Table 7.4 Determination of the equilibrium levels of output and income: private, public and foreign sectors (hypothetical data)

(1) Possible levels of domestic output ($ billion)	(2) Aggregate spending: closed economy (C + I + G) ($ billion)	(3) Exports X ($ billion)	(4) Imports M ($ billion)	(5) Net exports NX (3) − (4) ($ billion)	(6) Aggregate spending: open economy (C + I + G + NX) ($ billion)
370	400	30	18	12	412
390	415	30	20	10	425
410	430	30	22	8	438
430	445	30	24	6	451
450	460	30	26	4	464
470	475	30	28	2	477
490	**490**	**30**	**30**	**0**	**490**
510	505	30	32	−2	503
530	520	30	34	−4	516

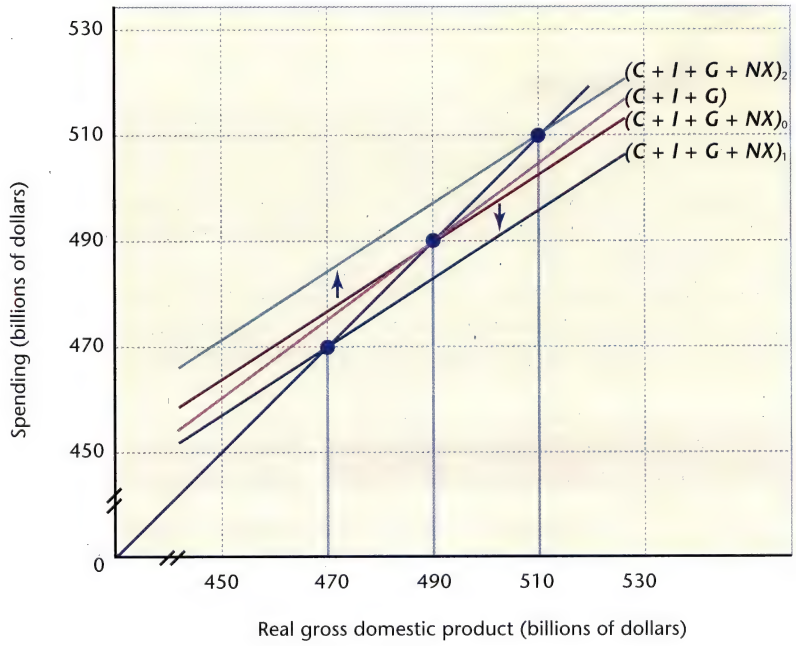


Figure 7.7
Net exports and the equilibrium GDP

An increase in net exports raises the aggregate expenditures schedule from $(C + I + G + NX)_0$ to $(C + I + G + NX)_2$ and increases the equilibrium GDP. Conversely, a decrease in net exports shifts the aggregate expenditures schedule downwards as from $(C + I + G + NX)_0$ to $(C + I + G + NX)_1$, and lowers the equilibrium GDP. Note also that net exports reduce the slope of the aggregate expenditures schedule, which implies a smaller multiplier.

OPEN-ECONOMY MULTIPLIER

Open-economy multiplier: recognises that imports represent a leakage from the aggregate expenditures – income flow. The simple open-economy multiplier is given by $\frac{1}{(MPS + MPM)}$ where MPM is the marginal propensity to import.

A final and rather technical point: you undoubtedly noted in Figure 7.7 that the slope of the aggregate expenditures schedule is reduced by the introduction of international trade. This diminished slope correctly implies a smaller multiplier. Specifically, in this figure we noted that a $7 billion change in net exports would cause a $20 billion change in equilibrium GDP, indicating a multiplier of 2.86 ($= \frac{\$20}{\$7}$). Why does this new **open-economy multiplier** differ from the multiplier of 4 associated with the closed economy of Table 7.3 and columns 1 and 2 of Table 7.4?

Recall that for the closed economy the multiplier is $\frac{1}{MPS}$ or, for our data, $\frac{1}{0.25}$, or 4. In other words, the multiplier is the reciprocal of the MPS, where we define the MPS as the fraction of any change in national income that 'leaks' into saving. Now, in moving to an open economy, we add a second leakage in the form of expenditures on imports; that is, saving and imports are similar in that both are ways of disposing of income other than spending it on domestically produced goods. Defining the marginal propensity to import (MPM) as the fraction of any change in national income that is spent on imports, we can add the MPM to the MPS in the denominator of the multiplier formula so that the multiplier becomes $\frac{1}{(MPS + MPM)}$ for an open economy. For the data of Table 7.4 the MPM is $\frac{2}{20}$, or 0.10. Hence:

$$\frac{1}{(MPS + MPM)} = \frac{1}{0.25 + 0.10} = \frac{1}{0.35} = 2.86$$

To repeat—because it entails another leakage from the domestic income-expenditures stream, international trade tends to reduce the size of the multiplier.

Concept highlights

- The addition of trade—exports (an injection) and imports (a leakage)—removes the assumption that we are dealing with a 'closed' economy.
- An increase in a country's exports or a decrease in its imports will have an expansionary effect upon its GDP. Conversely, a decline in exports or an increase in imports will have a contractionary impact upon GDP.
- Because imports are an income-sensitive leakage, the simple multiplier for an open economy is equal to the reciprocal of the sum of the marginal propensities to save and import. The introduction of imports thus reduces the size of the multiplier.

Asian FOCUS

THE BALANCE BETWEEN SAVINGS AND INVESTMENT

Our leakages–injections model suggests that we need to achieve balance between the leakages from our expenditure flows, through injection of expenditures, in order that we achieve equilibrium in GDP. The balance between leakages and injections varies widely across the region, reflecting differences in both the savings to GDP ratio and the investment to GDP ratio.

Country	Gross domestic investment, 1997 (per cent of GDP)	Gross domestic savings, 1997 (per cent of GDP)
Australia	20	21
China, mainland	38	43
China, Hong Kong SAR	34	31
India	24	20
Indonesia	31	31
Japan	30	30
Malaysia	43	44
New Zealand	22	22
Singapore	37	51
Thailand	35	36
Vietnam	29	21
World	**23**	**23**

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1 Does there appear to be a positive relationship between the investment to GDP ratio and the savings to GDP ratio? What is the possible source of this relationship?
2 Does a high rate of saving guarantee a high rate of investment, or does a high rate of investment guarantee a high rate of saving? Debate the direction of causality between savings and investment, providing supporting evidence for each side of the argument.
3 Which countries have a surplus of savings? Which countries have a deficit of savings? What are the implications of the balance between savings and investment for each of these categories of country? Explain.

THE COMPLEX MULTIPLIER

Complex multiplier: the multiplier that arises when all leakages—saving, taxes and imports—are taken into account. It is represented by:

$$\frac{1}{[1 - MPC(1 - MPT) + MPM]}$$

or

$$\frac{1}{[MPT + MPS(1 - MPT) + MPM]}$$

As we have discovered from our analysis of fiscal policy and the open economy, the simple multiplier presented at the beginning of the chapter is inadequate for incorporating all the leakages likely to stem the expenditure flows that provide the multiplier effect. The recognition of leakages in the form of taxes and imports, in addition to leakage from saving, suggests that we generalise the multiplier. This is best achieved by changing the denominator of the multiplier equation to read 'fraction of the change in income that is not spent on domestic output' or 'fraction of the change in income that leaks, or is diverted, from the income–expenditure stream'—put most simply, $\frac{1}{\text{leakages}}$. The more realistic multiplier that results when all these leakages—saving, taxes and imports—are taken into account is called the **complex multiplier (*k*)**. This is represented as follows (see the appendix to this chapter for its construction):

$$k = \frac{1}{[MPT + MPS(1 - MPT) + MPM]}$$

The complex version of the multiplier highlights the importance of the size of the MPT, MPS and MPM—the larger each of these components, and their total, the smaller the size of the multiplier. This is of course logical because these leakages are reducing the size of the successive rounds of expenditure on goods and services, which forms the basis of the multiplier process.

Concept application

Our study of fiscal policy allows us to appreciate an interesting application of our aggregate expenditures analysis to the conduct of fiscal policy. This is the recognition that equal increases in tax and government spending can bring about an increase in GDP.

BALANCED-BUDGET MULTIPLIER

You will have noted an important and curious thing about our tabular and graphical illustrations as we have studied the impact of the introduction of the government sector—through taxes and government spending—in this chapter. Government spending increases equilibrium GDP, while taxation reduces it. Of more interest to us, however, is the idea that equal increases in government expenditures and taxation may increase the equilibrium GDP; that is, if G and T are both increased by $\$Z$, the equilibrium level of domestic output will rise by $\$Z$. Referring to Tables 6.3 and 7.4, the \$20 billion increase in G and T causes the equilibrium GDP to increase by \$20 billion, from \$470 billion to \$490 billion.

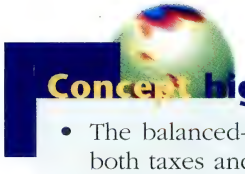
Balanced-budget multiplier: the multiplier showing the amount by which equilibrium output is increased, following the use of a discretionary fiscal policy that neither increases nor decreases the budget deficit (due to equal increases in both government spending and taxes).

The rationale for this so-called **balanced-budget multiplier** is revealed in our examples dealing with fiscal policy. A change in government expenditures has a more powerful effect on aggregate expenditures than does a tax change of the same size.

Government spending has a direct and unadulterated impact upon aggregate expenditures. Government spending is a component of aggregate expenditures and, when government purchases increase by \$20 billion as in our example, the aggregate expenditures schedule shifts upwards by the entire \$20 billion. But a change in taxes affects aggregate expenditures *indirectly* by changing disposable income and so changing consumption. Specifically, a lump-sum tax increase shifts the aggregate expenditures schedule downwards only by the amount of the tax times the MPC; that is, a \$20 billion tax increase shifts the aggregate expenditures schedule downward by \$15 billion (= \$20 billion × 0.75). This is because consumption and savings decisions are based on disposable income. The overall result is a net upward shift of the aggregate expenditures schedule of

$5 billion, which, subject to a multiplier of 4, boosts GDP by $20 billion. Equal increases in G and T are expansionary.

You should experiment to verify that the balanced-budget multiplier is valid regardless of the sizes of the marginal propensities to consume and save. Note, however, that we have considered only the demand-side impact of fiscal policy. We have not considered the incentive impact of taxes, including their impact on productivity and incentives to work, or their costs of collection. These effects may weaken the expansionary impact of the balanced-budget multiplier.



Concept highlights

- The balanced-budget multiplier shows the impact on equilibrium real GDP of equal increases in both taxes and government spending.
- The balanced-budget multiplier indicates that equal increases in both government expenditures and taxation will increase the equilibrium GDP.
- The balanced-budget multiplier result reflects the fact that consumption and saving are based on after-tax incomes. Thus, a shift in income from the private sector to the government reduces consumption spending only by the MPC times the fall in disposable income, not by the total amount by which income is reduced.

SUMMARY

1 Shifts in the saving–consumption schedules or in the investment schedule will cause the equilibrium output–income level to change by several times the amount of the initial change in spending. This phenomenon, which accompanies both increases and decreases in spending, is called the multiplier effect. The multiplier is the ratio of the change in equilibrium GDP to the initial change in expenditures that caused the change in final incomes. The simple multiplier is equal to the reciprocal of the marginal propensity to save (MPS).

2 The multiplier is based on the induced increases/decreases in consumption expenditures that result from increases/decreases in incomes as autonomous expenditures are added to or subtracted from aggregate expenditures. These induced increase/decreases in consumption expenditures, and the incomes that they provide or remove, themselves induce further rounds of increases/decreases in consumption expenditures according to the size of the MPC. (Autonomous increases are those that are assumed not to rely on income, for example investment.)

3 The message of the aggregate expenditures model is that the equilibrium level of real GDP and the full-employment, non-inflationary level of real GDP need not coincide. The amount by which aggregate expenditures fall short of the full-employment GDP is called the recessionary gap. This recessionary gap prompts a multiple decline in real GDP below that associated with full-employment output. The amount by which aggregate expenditures exceed the full-employment GDP is the inflationary gap. An inflationary gap, due to the inability to increase output above the full-employment level, causes demand-pull inflation.

4 The introduction of government into the aggregate expenditures model is viewed in the form of discretionary fiscal policy. Government spending adds an injection into the expenditure flow. Taxation adds a leakage from this flow. Increases in government expenditures expand, and decreases in government expenditures contract, the equilibrium level of real GDP. Conversely, increases in taxes reduce, and decreases in taxes expand, the equilibrium level of real GDP.

5 Where taxes take the form of income-sensitive leakages, the marginal propensity to tax (MPT) may be used to modify the multiplier. The multiplier for a closed economy with both a private and a public sector takes the following form:

$$\frac{1}{[\text{MPT} + \text{MPS}(1 - \text{MPT})]}$$

6 Appropriate fiscal policy to correct for unemployment entails increases in government expenditures and decreases in taxes—that is, a budget deficit. Decreases in government expenditures and increases in taxes—that is, a budget surplus—are appropriate changes to fiscal policy for correcting demand-pull inflation.

7 The addition of trade in the form of exports and imports removes the assumption that we are dealing with a 'closed' economy. Exports represent an injection into the flows of expenditures within the economy. Imports represent a leakage from the economy's expenditure flows.

8 An increase in a country's exports or a decrease in its imports will have an expansionary effect upon its GDP. Conversely, a decline in exports or an increase in imports will have a contractionary impact upon GDP.

9 Because imports are an income-sensitive leakage, the simple multiplier for an open economy is equal to the reciprocal of the sum of the marginal propensities to save and import:

$$\frac{1}{(\text{MPS} + \text{MPM})}$$

The introduction of imports as a leakage thus reduces the size of the multiplier.

10 The complex multiplier (k) expands upon the simple multiplier by focusing on the 'fraction of the change in income that is not spent on domestic output' or 'fraction of the change in income that leaks—in the form of saving, taxes and imports—from the income–expenditure stream'. Put most simply, it is equivalent to $\frac{1}{\text{leakages}}$. This complex multiplier is represented as follows:

$$k = \frac{1}{[\text{MPT} + \text{MPS}(1 - \text{MPT}) + \text{MPM}]}$$

11 The complex version of the multiplier highlights the importance of the size of the MPT, MPS and MPM—the larger each of these components, and their total, the smaller the size of the multiplier. This is due to a reduction in the size of the successive rounds of expenditure on goods and services, which forms the basis of the multiplier process.

12 The balanced-budget multiplier indicates that equal increases in both government expenditures and taxation will increase the equilibrium level of real GDP. Thus, the balanced-budget multiplier suggests that fiscal policy

may be used in an expansionary fashion without increasing the size of the budget deficit (taxes less government spending).

13 The balanced-budget multiplier result reflects the fact that consumption and saving are based on after-tax incomes. Thus, a shift in income from the private sector to the government reduces consumption spending only by the MPC times the fall in disposable income, not by the total amount by which income is reduced.

KEY TERMS *and* CONCEPTS *to remember*



balanced-budget multiplier	247	lump-sum tax	237
complex multiplier (k)	247	multiplier	227
contractionary fiscal policy	241	multiplier effect	227
discretionary fiscal policy	234	open-economy multiplier	245
expansionary fiscal policy	240	recessionary gap	231
inflationary gap	232	simple multiplier	230

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What is the multiplier effect? What relationship does the MPC bear to the size of the multiplier? What relationship does the MPS bear to the size of the multiplier? Explain.

2 What is the basis for the multiplier effect? Explain, carefully, the process by which the multiplier effect is generated.

3 What impact does the introduction of a government sector with income-sensitive taxes have on the size of the multiplier? Why?

4 Explain how discretionary fiscal policy can be used to close inflationary and recessionary gaps.

5 What impact does the introduction of trade—exports and income-sensitive imports—have on the size of the multiplier? Explain.

6 Explain how an up-sloping aggregate supply curve might weaken the multiplier effect.

7 What is the complex multiplier? In what ways does it differ from the simple multiplier? Explain.

8 What is the balanced-budget multiplier? Explain: 'Equal increases in government expenditures and tax revenues of n dollars will increase the equilibrium GDP by n dollars.' Does this hold true regardless of the size of the MPS?



1 Explain graphically the determination of equilibrium GDP through both the aggregate expenditure – domestic output approach and the leakages–injections approach for the private sector. Now add government expenditures and taxation, showing the impact of each upon the equilibrium GDP. What impact does the introduction of a government sector that bases taxes on incomes have on the slopes of the schedules used in your analysis? Explain.

2 Repeat the analysis of the previous question, but this time add international trade to the analysis. Discuss the impact of the introduction of a leakage based on incomes on the slopes of the schedules used in your analysis.

3 Assuming the level of investment is $16 billion and independent of the level of total output, complete the following table and determine the equilibrium level of output and income that the private sector of the economy would provide.

(a) If this economy has a labour force of 70 units, will there exist an inflationary or a recessionary gap? Explain the consequences of this gap.

(b) Will an inflationary or a recessionary gap exist if the available labour force is only 55 units? Trace the consequences.

(c) What are the sizes of the MPC and MPS?

(d) Use the multiplier concept to explain the increase in the equilibrium GDP that will occur as the result of an increase in investment expenditures from $16 to $20 billion.

Possible levels of employment (× 100 000)	National output GDP = DI ($ billion)	Consumption ($ billion)	Saving ($ billion)
40	240	244	
45	260	260	
50	280	276	
55	300	292	
60	320	308	
65	340	324	
70	360	340	
75	380	356	
80	400	372	

4 Using the consumption and saving data from the previous question and assuming the level of investment is $16 billion, what are the levels of saving and planned investment at the $380 billion level of domestic output? What are the levels of saving and actual investment? What are saving and planned investment at the $300 billion level of domestic output? What are the levels of saving and actual investment? Use the concept of unintended investment to explain adjustments towards equilibrium from both the $380 and $300 billion levels of domestic output.

5 What will the multiplier be when the MPS is 0, 0.4, 0.6 and 1? When the MPC is 1, $\frac{8}{9}$, $\frac{2}{3}$, $\frac{1}{2}$ and 0? What conclusions can you make about the relationship between the MPC and the multiplier?

6 How much of a change in GDP will result if businesses increase their level of investment by $8 billion and the MPC in the economy is $\frac{4}{5}$? If the MPC is $\frac{2}{3}$?

7 Assume the consumption schedule for the economy is such that $C = 50 + 0.8Y$. Assume further that investment is autonomous or exogenous (indicated by I_0); that is, investment is independent of the level of income and in the amount $I = I_0 = 30$. Recall also that in equilibrium the aggregate amount of output produced (Y) is equal to the aggregate expenditures ($C + I$), or $Y = C + I$.

(a) Calculate the equilibrium level of income for this economy. Check your work by putting the consumption and investment schedules in tabular form and determining the equilibrium income.

(b) What will happen to equilibrium Y if $I = I_0 = 10$? What does this tell you about the size of the multiplier?

8 If $I = I_0 = 50$ and $C = 30 + 0.5Y$, what is the equilibrium level of income? If $I = 10 + 0.1Y$ and $C = 50 + 0.6Y$, what is the equilibrium level of income? What is the multiplier for this economy?

9 Refer to the tabular data for question 3 in this section. Now, assuming investment of $16 billion, incorporate government into the table by assuming that it plans to tax and spend $20 billion at each possible level of GDP. Assume all taxes are personal taxes and that government expenditures does not entail shifts in the consumption and investment schedules. Explain the changes in the equilibrium GDP that the addition of government entails.

10 The data in columns 1 and 2 of the table below are for a closed economy.

(1) Domestic output GDP = DI ($ billion)	(2) Aggregate expenditures: closed economy ($ billion)	(3) Exports ($ billion)	(4) Imports ($ billion)	(5) Net exports ($ billion)	(6) Aggregate expenditures: open economy ($ billion)
200	240	20	18		
250	280	20	22		
300	320	20	26		
350	360	20	30		
400	400	20	34		
450	440	20	38		
500	480	20	42		
550	520	20	46		

(a) Use columns 1 and 2 to determine the equilibrium GDP and the multiplier for the closed economy.

(b) Now open this economy for international trade by including the export and import figures of columns 3 and 4. Determine the equilibrium GDP and the multiplier for the open economy. Explain why these figures differ from those for the closed economy.

(c) Given the import figures of column 4, what would be the level of equilibrium GDP if exports were $48 billion? And $6 billion? What generalisation concerning the level of exports and the equilibrium GDP can you derive from these examples?

(d) Given the original $20 billion level of exports, what would be the equilibrium GDP if imports were $14 billion larger at each level of GDP? Or $14 billion smaller at each level of GDP? What generalisation concerning the level of imports and the equilibrium GDP is illustrated by these examples?



1 Critically evaluate the following statement: 'It is socially desirable for households to attempt to increase their rate of saving whenever a recession begins. In this way households will be able to accumulate the financial resources to pay their way through bad times.'

2 Critically evaluate the following statement, in light of the multiple leakages and injections that occur in our aggregate expenditures model of the open economy, with both public and private sectors: 'The fact that households may save more than businesses want to invest is of no consequence, because events will in time force households and businesses to save and invest at the same rates.'



1 For further details on the mathematics underlying the multiplier, see the appendix to this chapter.

2 Our discussion ignores another complication: Full employment (or capacity production) itself is something of an elastic concept because a given number of workers can increase their hours of work just by working overtime; as a matter of fact, persons who are not ordinarily in the labour force may also be induced to offer their services when job opportunities are abundant. The general validity of our analysis is not impaired by ignoring this refinement.

3 By net taxes we mean total tax revenues less 'negative taxes' in the form of transfer payments.

4 Given our assumption that the full-employment non-inflationary GDP is $490 billion, most of this increase will be in money rather than real GDP.

5 This is clearly a regressive tax system because the average tax rate, T/GDP, falls as GDP rises. Most industrially advanced economies have proportional or progressive tax systems. The important modifications to which these latter two systems give rise will be noted shortly.

6 Qualification: In our numerical and graphical illustrations we have seen that equal increases in G and T entail a balanced-budget multiplier that is expansionary. Because a change in government expenditures has a larger effect on aggregate expenditures than does an equal change in taxes, an increased budget that results in a relatively small surplus might be slightly expansionary. For example, with an MPC of 0.75, an increase in lump-sum taxes of $20 billion would result in a fall in consumption expenditure of $15 billion ($20 billion × 0.75). An increase in government expenditures of $16 billion would provide a net increase in aggregate expenditure of $1 billion, increasing equilibrium real domestic output by $4 billion. The above case represents the implementation of expansionary fiscal policy, although the budget moves into surplus by $4 billion ($20 billion − $16 billion).

However, if a contractionary fiscal policy is desired, the required surplus must be generated by an increase in taxation, a decrease in government expenditure, or a combination of the two; aggregate expenditures will fall.

The result of a contractionary fiscal policy will, therefore, be a fall in the equilibrium level of real domestic output.

7 This increase may be in terms of real GDP or money GDP, depending on where the economy is located on the economy's aggregate supply curve (Chapter 8).

A LAST WORD THE NEW KEYNES TO CANBERRA

Low inflation and spending cuts have made the world safe again for the ideas of John Maynard Keynes. The aggregate expenditures model provides a useful vehicle for analysis, using ideas developed by Keynes, especially when prices can be assumed to be constant, or the rate of increase in prices is very low. Thus, the reports of the death of his ideas in the late 1970s were greatly exaggerated, as Michael James writes.

John Maynard Keynes is alive and well and living in Canberra. For some time, it's been clear that reports of his death in the late 1970s were greatly exaggerated. He lingered in the economics departments of the universities during the 1980s, and when the recession arrived in 1991 all the talk was of 'pump-priming' and 'stimulus' by means of Budget deficits. But it is the 1996 Budget, and especially the way its spending cuts have been defended, that confirms that Keynes has been rehabilitated in all but name.

It's important to distinguish the ideas of Keynes himself from those of the 'post-Keynesians' whose ideas were reflected in the pre-Budget letter to the press from 114 academic economists opposing spending cuts. Keynes was clear that the Budget should balance over the business cycle. He thought that the purpose of fiscal policy was to counter that cycle: deficits during recessions should be balanced by surpluses during recoveries. Perpetual deficits, in contrast, must ultimately socialise the economy and eliminate the business cycle through central planning. It's worth recalling why the attempt to kill Keynes off was made. Keynesian policies seemed discredited in the late 1970s by the combination of rising inflation, slow growth and high unemployment ('stagflation') that gripped many Western economies. Macroeconomic policy came under the influence of theories of monetarism and rational expectations; and attention was turned to the long-neglected and sclerotic supply side of the economy. In the 1990s, it looks as if monetary policy, at least, has succeeded: inflation is low. The supply side, however, remains largely unreformed and unemployment is high, and even rising, in many Western economies. It was precisely this combination of stable prices and high unemployment that made Keynes's reflationary policies seem so attractive in the 1930s. The Keynesian-oriented US economist Paul Krugman claims in *The Economist* that the wage inflexibility that originally prompted the search for a macroeconomic response to unemployment is still with us, and is exacerbated by the drive for low inflation, since this reduces the scope for cutting real wages by means of zero or minimal increases in nominal wage levels (it being all but impossible to cut nominal wages).

There is, however, a crucial difference between the 1930s and the 1990s. Government is much bigger, and its scope for discretionary counter-cyclical intervention and policy innovation much more restricted than it was 60 years ago. This condition has recently been dubbed 'demosclerosis' by the US journalist Jonathan Rauch. Rauch argues that the US tax base has been almost completely monopolised by the public debt interest bill and social security, Medicare and other 'entitlement' programs, leaving government without the means to respond to new problems that demand its attention. Fear of policy paralysis induced by big government seems to have played a part in the decision to make substantial spending cuts in Australia's Budget: in his speech of 2 September to the Australian Business Economists, Ted Evans, Secretary of the Treasury, said the long-term increase in public debt was not only restricting the government's scope to deal with the next downturn in the business cycle, but also limiting 'our flexibility in addressing other social priorities'.

Low inflation and spending cuts, then, have made the world safe again for Keynes. If that sounds paradoxical, it is because it reflects a paradox generated by the expansion of government over the past 50 years. Advocates of less government intervention have traditionally sought to make government itself smaller (so it had to do fewer things), while advocates of activist government have traditionally sought to make it bigger (so it could do more things). But demosclerosis has reversed that relationship: it is now not irrational for advocates of less intervention to welcome, or at least acquiesce in, government that is big and immobile, and for advocates of more intervention to welcome spending cuts that make government flexible. Milton Friedman was not joking when he observed that the big Budget deficits in the US in the 1980s were a powerful restraint on public spending. That paradox, then, makes some sense. But little sense can be made of the contradiction that the rebirth of Keynes brings to the heart of the present economic policy regime.

Current macroeconomic policy assumes that active fiscal and monetary policies are benign: that intervention works. But microeconomic policy reflects the opposite assumption: that government intervention is likely to fail and should be scaled down in favour of market forces. Moreover, the contradiction so operates that the latter branch of policy undermines the former. Keynes proposed reflation as a way of reducing unemployment because he believed that the alternative, microeconomic route of pursuing wage flexibility was politically out of bounds. As well, economies were relatively closed in the 1930s, so that little of the additional demand created by pump-priming would leak out through the current account. But now, fiscal activism is accompanied by a continuing microeconomic reform program that was itself conceived in the 1970s as part of the rejection of Keynesian policies.

To the extent that the present drive for labour market reform succeeds, it will make fiscal activism unnecessary, while the globalisation of the economy pursued by cuts in protection will make it ineffective. It is as if it never occurred to many of the economists who learned their macro and their micro in separate undergraduate classes that the two were based on conflicting assumptions.

SOURCE: Australian, *13 September 1996, p. 23.*

Questions

You may find it useful to visit the Department of Treasury's website at:
http://www.treasury.gov.au/
You will find a summary of the Treasurer's budget statement and material on the underlying philosophy of the budget, which will assist you in analysing the issues raised in the following questions.

1 Is current government policy apparently consistent with Keynes's idea of using the budget deficit to dampen the cycle? Explain, giving reference to the current trend for Australian governments to wish to run a surplus in the budget balance.

2 Has the current focus of government policy moved towards microeconomic issues and away from traditional issues associated with macroeconomics? Explain.

3 In what sense are the presence of budget surpluses and a reduction in the level of public debt during an upturn in the economy providing us with more options for the conduct of fiscal policy during economic downturns in the future? Discuss this issue.

4 In what senses might there be a conflict between the macroeconomic and microeconomic views of government intervention? Does this mean that economic policy setting will always face internal conflicts?

APPENDIX *to* CHAPTER 7

DERIVATION OF THE MULTIPLIERS

Throughout Chapter 7 we have used a number of different multipliers. This was largely to allow a focus on the key issues surrounding changes to the simple aggregate expenditures model of Chapter 6—in particular, the addition of the government and foreign sectors. In this appendix we will discuss a number of important points associated with the concept of our multipliers, and will derive the complex multiplier from the leakages–injections form of the aggregate expenditures – income model of our open mixed economy.

LEARNING OBJECTIVES

- **Describe the algebra underlying the simple multiplier.**
- **Discuss the logic of the super multiplier.**
- **Derive the complex multiplier.**

THE MATHEMATICS OF THE SIMPLE MULTIPLIER

The algebra underlying the simple multiplier is that of an 'infinite geometric progression' or, simply stated, an infinite series of numbers, each of which is a fixed fraction of the previous number. If we designate the fixed fraction as b, the geometric progression is:

$$k = 1 + b + b^2 + b^3 + \ldots + b^n \qquad (1)$$

where k is the sum of the progression.
This equation can be readily manipulated to prove that:

$$k = \frac{1}{(1 - b)}$$

If we start by multiplying both sides of equation (1) by b we get:

$$bk = b + b^2 + b^3 + b^4 + \ldots + b^{n+1} \qquad (2)$$

Now, by subtracting equation (2) from equation (1), we find that all the terms on the right side of equation (1) drop out except the first (the '1') and that only the last term on the right side of equation (2) remains. Thus we have:

$$k - bk + 1 - b^{n+1} \qquad (3)$$

Factor k on the left side:

$$k(1 - b) = 1 - b^{n+1} \qquad (4)$$

Now divide by $(1 - b)$:

$$k = \frac{(1 - b^{n+1})}{(1 - b)} \qquad (5)$$

Since n is very large and $0<b<1$, the value of b^{n+1} approaches zero and can be dropped, resulting in:

$$k = \frac{1}{(1 - b)} \qquad (6)$$

In terms of economic content of the simple multiplier, k in (6) indicates the multiplier's size while b represents the MPC. You should experiment with equation (1), using MPCs of, say, 0.5, 0.6 and 0.8, to show that a $1 increase in expenditures will generate $2, $2.50 and $5 of income respectively.

A 'SUPER MULTIPLIER'—THE CASE OF INCOME-SENSITIVE INVESTMENT EXPENDITURES

To get an understanding of the implications of having investment expenditures that are dependent on the level of income, you should perform the following experiment:

1. Substitute the investment schedule of columns 1 and 3 in Table 6.3 in column 5 of Table 6.4.
2. Assume a $5 billion increase in saving.
3. Compute (estimate) the new equilibrium point at which intended saving equals intended investment.
4. Compare the original and the new amounts saved.
5. Calculate the size of the multiplier.

Note that the size of the multiplier implied by your analysis is larger than that where only the MPC determines the size of the multiplier. This is because, for each successive round of income, there will occur not only additional consumption, as with our simple multiplier, but also additional investment. The multiplier process involves not only a marginal propensity to consume (MPC) of 0.75, but also a marginal propensity to invest (MPI) of 0.10, the latter defined as the ratio of a change in investment relative to the change in GDP that induced or resulted in that change in investment. Hence, we must add the MPI to the denominator of our formulation of the multiplier:

$$\frac{1}{(1 - \text{MPC})} \tag{7}$$

This makes our equation:

$$\frac{1}{[1 - (\text{MPC} + \text{MPI})]} \tag{8}$$

Based on the numbers that our analysis of the extended Table 6.3 provides—an MPC of 0.75 and an MPI of 0.10—the multiplier equals:

$$\frac{1}{[1 - (0.75 + 0.10)]} = \frac{1}{0.15} = 6\tfrac{2}{3}$$

THE COMPLEX MULTIPLIER

The complex multiplier of Chapter 7 recognises that the leakages from our expenditures–income flow may take a number of forms. Within our simplified aggregate expenditures model, these leakages constitute taxes on incomes (T), saving by households (S), and the presence of an imported component in our consumption, investment and government expenditures (M).

Counteracting the income-reducing impact of these leakages are injections, represented in the aggregate expenditures model by investment (I), government purchases of goods and services (G), and foreign demand for our product—exports (X). We can use our understanding of the leakages–injections version of the aggregate expenditures model to derive the complex multiplier.

Let us now develop a simple representation of the relationships between income and each of the leakages in the aggregate expenditures model. Let:

$$T = T_{LS} + \text{MPT}(Y) \tag{9}$$

$$S = -A + \text{MPS}(1 - \text{MPT})(Y) \tag{10}$$

$$M = M_A + \text{MPM}(Y) \tag{11}$$

where T_{LS} is lump-sum taxes, A is autonomous consumption expenditures, and M_A is autonomous imports. These items simply reflect that some components of taxation, saving and imports—the autonomous components—are not sensitive to changes in the level of real GDP; that is, they are determined by non-income factors that are outside our simple model. MPT, MPS and MPM are simply the marginal propensities to tax, save and import, respectively. Note that saving is based upon after-tax income $(1 - \text{MPT})(Y)$, rather than pre-tax income (Y).

For simplicity, we will assume that the injections into our aggregate expenditures model are autonomous. Thus we will have:

$$I = I_0 \tag{12}$$

$$G = G_0 \tag{13}$$

$$X = X_0 \tag{14}$$

At the equilibrium level of real GDP we know that the leakages from our expenditures–income flow are exactly offset by the injections into the flow, so:

$$S + T + M = I + G + X \tag{15}$$

Using equations (9) to (14) to provide the forms for S, T, M, I, G and X in (15) gives:

$$T_{LS} + \text{MPT}(Y) + (-A) + \text{MPS}(1 - \text{MPT})(Y) + M_A + \text{MPM}(Y) = I_0 + G_0 + X_0 \tag{16}$$

while collecting all autonomous terms together provides:

$$\text{MPT}(Y) + \text{MPS}(1 - \text{MPT})(Y) + \text{MPM}(Y) = I_0 + G_0 + X_0 - T_{LS} + A - M_A \tag{17}$$

Collecting all terms dependent on income together and letting AE_A represent net autonomous components of aggregate expenditures, we get:

$$[\text{MPT} + \text{MPS}(1 - \text{MPT}) + \text{MPM}](Y) = AE_A \tag{18}$$

so:

$$Y = \frac{1}{[\text{MPT} + \text{MPS}(1 - \text{MPT}) + \text{MPM}]}(AE_A) \tag{19}$$

That is, the equilibrium level of real GDP in the economy is a function of the autonomous components of aggregate expenditures (AE_A) and the complex multiplier:

$$k = \frac{1}{[\text{MPT} + \text{MPS}(1 - \text{MPT}) + \text{MPM}]}$$

The complex version of the multiplier highlights the importance of the size of the MPT, MPS and MPM—the larger each of these components, and their total, the smaller the size of the multiplier. This is of course logical because these leakages are reducing the size of the successive rounds of expenditure on goods and services that forms the basis of the multiplier process.

SUMMARY

1 The algebra underlying the simple multiplier is that of an 'infinite geometric progression'—an infinite series of numbers. Each of these numbers is a fixed fraction of the previous number, designated in our analysis as b. The fact that $0<b<1$ allows us to provide a simplified and finite solution to the impact of a change in spending on the change in income in the economy.

2 The 'super-multiplier' introduces an investment function that is income-sensitive and thus a marginal propensity to invest (MPI). The size of the multiplier implied by its addition is larger than that where only the MPC determines the size of the multiplier. This is because for each successive round of income there will occur not only additional consumption, but also additional investment.

3 The complex multiplier recognises that the leakages from our expenditures–income flow may take a number of forms: taxes on incomes (T), saving by households (S), and the presence of an imported component in our consumption, investment and government expenditures (M). Counteracting the income-reducing impact of these leakages are injections: investment (I), government purchases of goods and services (G), and foreign demand for our product—exports (X).

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What forms the basis for the derivation of the simple multiplier? Explain the steps in its development, and the basis for some of the assumptions.

2 Why is the 'super-multiplier' larger than the simple multiplier? Explain.

3 Why is the complex multiplier smaller than the simple multiplier? Need this always be the case? Explain.

Problems & exercises

1 Using the consumption and saving data from question 2, Problems and Exercises, Chapter 6, what will the equilibrium level of income be if planned investment is $2 billion at the $240 billion level of GDP and increases by $2 billion for every $20 billion increase in GDP? Assuming that businesses want to invest $4 billion more at each level of GDP, what will be the new equilibrium GDP? What is the size of the 'super-multiplier'? Explain why it is larger than the multiplier derived in question 2, Problems and Exercises, Chapter 6.

2 Assume that, in the absence of any taxes, the consumption schedule for an economy is as shown in the table over the page.

(a) Graph this consumption schedule and note the size of the MPC and the MPS.

(b) Assume that a lump-sum (regressive) tax system is imposed in such a way that the government collects $10 billion in taxes at all levels of GDP. Calculate the tax rate at each level of GDP. Graph the resulting consumption schedule.

GDP ($ billion)	Consumption ($ billion)
100	120
200	200
300	280
400	360
500	440
600	520
700	600

(c) Now suppose a proportional tax system with a 10 per cent tax rate is imposed instead of the regressive system. Calculate the new consumption schedule, graph it and note the MPC, the MPS and the multiplier.

(d) Finally, impose a progressive tax system such that the tax rate is 0 per cent when GDP is $100 billion, 5 per cent at $200 billion, 10 per cent at $300 billion, 15 per cent at $400 billion, and so forth. Determine and graph the new consumption schedule, noting the effect of this tax system on the MPC, the MPS and the multiplier.

(e) Explain why the proportional and progressive tax systems contribute to greater economic stability, while the regressive system does not. Demonstrate graphically.

3 We can add the public sector to the private economy model of question 5, Problems and Exercises, Chapter 6, as follows. Assume $G = G_0 = 28$ and $T = T_0 = 30$. Because of the presence of taxes, the consumption schedule $C = 52 + 0.8Y$ must be modified to read $C = 52 + 0.8(Y - T)$, where the term $(Y - T)$ is disposable (after-tax) income. Assuming all taxes are on personal income, investment will be $I = I_0 = 30$. Using the equilibrium condition for the leakages–injections version of the aggregate expenditures model, determine the equilibrium level of income. Explain what the addition of the public budget with a slight surplus does to the equilibrium income level. Now substitute $T = 0.2Y$ for $T = T_0 = 30$, and solve again for the level of income. What impact does the introduction of a proportional tax have on the multiplier?



Chapter 8 AGGREGATE DEMAND AND AGGREGATE SUPPLY

INTRODUCTION

Chapters 6 and 7 developed the aggregate expenditures model of the macroeconomy. This model focused on the fluctuations in our real GDP under the assumption that the general level of prices would remain unchanged, thus providing an example of a fixed-price-level model. However, the fixed-price-level assumption ignores the fact that changes in real GDP over the business cycle (Chapter 5) have normally been associated with considerable fluctuations in the price level.

At times there has been an apparent trade-off between the level of output—and employment—and the general price level. Thus periods of near-capacity production and low unemployment have been accompanied by inflation. For example, in the 1980–81 period, unemployment averaged 5.9 per cent, while the CPI rose 9.4 per cent. Conversely, we have encountered periods in which production has slumped—increasing unemployment—but the price level has been relatively stable. For example, during 1992–93 unemployment averaged 11 per cent, while the CPI rose by only 1.1 per cent.

At other times, particularly in the 1970s and early 1980s, the trade-off between unemployment and inflation has been absent—high unemployment has coexisted with a rapidly rising price level—stagflation has been the outcome. Thus during 1971–76 inflation increased from 4.5 to 16.8 per cent and unemployment simultaneously rose from 1.4 to 4.6 per cent! Of course, our economy has also enjoyed periods of macroeconomic serenity—the late 1950s saw inflation average 1.9 per cent, while unemployment averaged 2.5 per cent.

The purpose of this chapter is to develop a variable-price model of the macroeconomy, allowing us to simultaneously analyse changes in real GDP and the price level. We will also explain the links between this model and the aggregate expenditures model of Chapters 6 and 7.

LEARNING OBJECTIVES

- **Introduce the concepts of aggregate demand and aggregate supply.**
- **Distinguish between short-run and long-run aggregate supply.**
- **Explain the shapes of the aggregate demand and supply curves.**
- **Discuss the relationship that exists between the aggregate expenditures model and the aggregate demand curve.**
- **Describe the non-price factors that cause the aggregate demand and aggregate supply curves to shift.**
- **Combine the aggregate demand and aggregate supply curves to provide a model of macroeconomic economic equilibrium.**
- **Discuss how the aggregate demand – aggregate supply model may be used to analyse the circumstances outlined in Chapter 5.**
- **Contrast demand-pull and cost-push inflation.**
- **Discuss reasons why the general level of prices is downwards 'sticky'—the ratchet effect.**
- **Explain the impact of price-level changes on the size of the multiplier.**

Note that while the aggregate demand and aggregate supply curves will look somewhat like the single-product demand and supply curves from Chapter 3 'in large scale', the variables being measured and the underlying rationales for the curves are *completely* different. Our analysis is now in terms of aggregates—that is, in terms of the economy as a whole. Therefore, the axes of our diagrams will be the overall price level (*P*)—reflected in the implicit price deflator (*IPD*)—and real GDP (or *Q*), rather than the price of product *X* and units of product *X*.

AGGREGATE DEMAND

The aggregate demand schedule shows the amount of goods and services—real domestic output—that domestic consumers, businesses, the government and foreign buyers will collectively want to purchase at each possible price level. Other things being equal, the lower the average level of prices, the larger will be the level of real domestic output purchased. Conversely, the higher the average level of prices, the lower will be the level of real domestic output purchased. Thus the relationship between the price level and real GDP is inverse or negative.

AGGREGATE DEMAND CURVE

The **aggregate demand curve** shows the amount of goods and services—real domestic output—that will be purchased at each possible price level. As shown in Figure 8.1, the aggregate demand curve slopes downwards and to the right.

Why so? Curiously, the rationale is not the same as that which applies to the demand for a single product, which is based on income and substitution effects.

Aggregate demand curve: represents the amount of goods and services, real GDP, that will be purchased at each possible price level.

These explanations break down when we are dealing in terms of aggregates. In Figure 8.1 *all* prices are falling (on average) as we move down the aggregate demand curve, so the rationale for the substitution effect (a product becoming cheaper relative to all other products) is not applicable. Similarly, while an individual's demand curve for a specific product assumes the consumer's income to be fixed, the aggregate demand curve implies varying aggregate incomes.

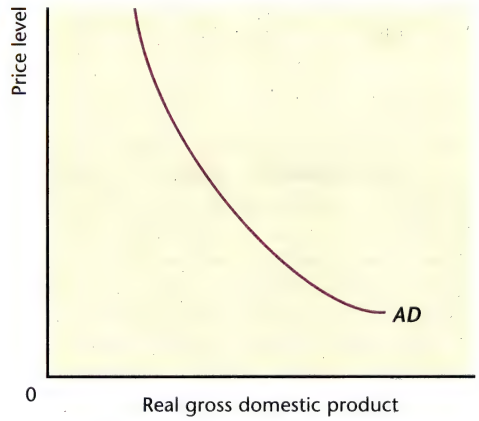


FIGURE 8.1
The aggregate demand curve

The down-sloping aggregate demand curve indicates that the lower the price level, the larger the level of real domestic output that will be purchased.

The reason for varying aggregate incomes is that as we move up the aggregate demand curve, we move to higher price levels. But higher prices paid for goods and services flow to resources suppliers as higher wage, rent, interest and profit incomes. To oversimplify, a 5 per cent increase in the price level increases money incomes by 5 per cent. As a result, an increase in the price level need not necessarily mean a decline in the real purchasing power of the economy. If that enlarged income is spent, the same real domestic output could be purchased. However, as we are about to discuss, other factors will lead to a fall in the total level of real incomes and output in the economy as the price level rises.

The three major factors that provide the rationale for a down-sloping aggregate demand curve are the interest-rate effect, the real-balances effect and the foreign-purchases effect.

INTEREST-RATE EFFECT

Interest-rate effect: as the price level rises so do interest rates; rising interest rates cause reductions in certain kinds of consumption and, most importantly, investment spending.

The **interest-rate effect** suggests that the rationale for the down-sloping aggregate demand curve lies in the impact of the changing price level on interest rates and, in turn, on consumption and investment spending. More specifically, as the price level rises so will interest rates; rising interest rates will in turn cause reductions in certain kinds of consumption and investment spending.

Here is an elaboration. When the price level increases, consumers need to have more money on hand for making purchases, and businesses similarly require more money to meet their payrolls and purchase other needed inputs. In short, a higher price level increases the demand for money. If the supply curve for money is up-sloping, this increase in demand drives up the price paid for the use of money. That price, of course, is the interest rate.

Alternatively, we might focus on the impact of increases in the price level on the real returns paid to investors and other groups that provide funds to businesses and consumers for investment expenditure and the purchase of consumer durables. Higher prices reduce the purchasing power of the money these groups receive from the loans or investments they have made. Additionally, higher prices reduce the purchasing power of the streams of interest incomes—in the form of interest payments—that they receive. How will these individuals protect themselves from this erosion to their returns? By increasing the interest rates that they charge for funds! Higher interest rates ensue. These ideas will be pursued in greater detail in Chapter 12, which deals with monetary policy.

Higher interest rates curtail certain interest-sensitive expenditures by businesses and households. A firm that expects a 10 per cent return on a potential capital goods purchase will find that purchase profitable when the

interest rate is only 7 per cent. But when the interest rate has risen to 12 per cent, the purchase becomes unprofitable and will therefore not be made. Similarly, an increase in the interest rate, especially in the face of fixed money income, makes some consumers decide not to purchase houses or other consumer durables. To summarise—a higher interest rate curtails certain interest-sensitive business and consumer expenditures.

Our conclusion is that a higher price level, by leading to increases in interest rates, causes a reduction in the amount of real output demanded.

REAL-BALANCES EFFECT

Real-balances effect (or wealth effect): at a higher price level, the real value or purchasing power of the accumulated financial assets held by the public falls; the fall in real wealth of the public leads to a reduction in consumption expenditures.

A second reason why the aggregate demand curve is down-sloping involves the wealth effect, or **real-balances effect**. The idea here is that at a higher price level the real value or purchasing power of the accumulated financial assets held by the public—in particular, assets with fixed money values such as savings accounts or bonds—diminishes. Because of the erosion of the real value of such assets, the public is now poorer in real terms and can therefore be expected to reduce its spending. A household might feel comfortable in buying a new car or a boat if the real value of its financial asset balances is, say, $50 000. But if inflation causes the real value of these asset balances to decline to, say, $30 000, the family may decide to defer its purchase. Conversely, a decline in the price level increases the real value of the household's wealth and tends to increase spending.

FOREIGN-PURCHASES EFFECT

Foreign-purchases effect: a rise in our domestic price level will increase our imports and reduce our exports, reducing net exports.

We found, in the discussion of national income accounting in Chapter 4, that imports and exports are important components of aggregate demand. For present purposes, the point to be noted is that the volumes of our imports and exports depend, among other things, upon the relative price levels here and abroad. Therefore, if our price level rises relative to foreign countries, Australian buyers will purchase more imports at the expense of Australian goods. Similarly, foreigners will also buy fewer Australian goods, causing our exports to decline. In short, other things being equal, a rise in our domestic price level increases our imports and reduces our exports, thereby reducing the net exports component of aggregate demand in Australia. Conversely, a relative decline in our price level reduces our imports and increases our exports, thereby increasing the net exports component of Australian aggregate demand. The impact on aggregate demand of these changes is denoted as the **foreign-purchases effect**.

DERIVING THE AGGREGATE DEMAND CURVE FROM THE AGGREGATE EXPENDITURES MODEL[1]

We can reconcile the aggregate expenditures model developed in Chapters 6 and 7, which shows the relationship between aggregate expenditures and real GDP, with our aggregate demand curve that shows an inverse relationship between real GDP and the price level.

The aggregate expenditures model assumes that an increase/decrease in aggregate expenditures brings about an increase/decrease in total output at the existing or 'going' price level. The aggregate demand curve, by definition, merely relates the various possible price levels to the corresponding equilibrium real GDPs.

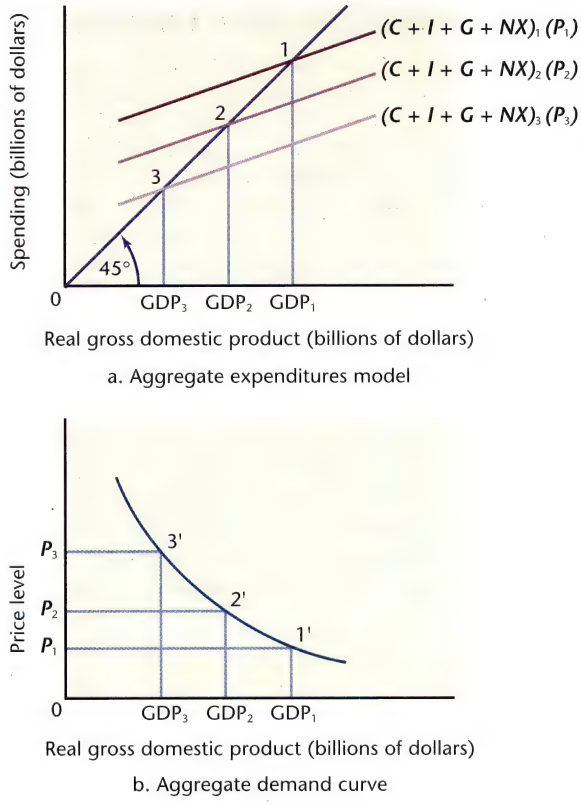


FIGURE 8.2
Deriving the aggregate demand curve from the expenditures–output model

Through the interest-rate effect, the wealth or real-balance effect and the foreign-purchases effect, the investment, consumption and net export schedules, and therefore the aggregate expenditures schedule, will rise/fall when the price level declines/increases. If the aggregate expenditures schedule is at $(C + I + G + NX)_2$ when the price level is P_2, we can combine that price level and the equilibrium output, GDP_2, to determine one point, 2', on the aggregate demand curve. A lower price level such as P_1 shifts aggregate expenditures to $(C + I + G + NX)_1$, providing us with point 1' on the aggregate demand curve. Similarly, a higher price level at P_3 shifts aggregate expenditures down to $(C + I + G + NX)_3$, so P_3 and GDP_3 yield another point on the aggregate demand curve at 3'.

Consider Figure 8.2. Note, to begin with, that we can stack our aggregate expenditures model of Figure 8.2(a) and the aggregate demand curve of Figure 8.2(b) vertically because real domestic output is being measured on the horizontal axis of both models. Now we can start in the top diagram with an aggregate expenditures schedule that yields $(C + I + G + NX)_2$. The price level that is relevant to this aggregate expenditures schedule is P_2 as shown in parentheses. From this information we can plot the equilibrium real domestic output, GDP_2, and the corresponding price level of P_2. This gives us one point—that is, 2'—on the aggregate demand curve of Figure 8.2(b).

We can now go through the same procedure but assume that the price level is lower at P_1. We know that, other things being equal, a lower price level:

1. reduces the interest rate, increasing investment expenditures
2. increases the real value of wealth, boosting consumption expenditures
3. reduces imports and increases exports, raising net export expenditures.

Thus the aggregate expenditures schedule rises from $(C + I + G + NX)_2$ to, say, $(C + I + G + NX)_1$, giving us equilibrium at GDP_1. In Figure 8.2(b) we locate this new price level – real domestic output combination, P_1 and GDP_1, at point 1'.

Similarly, let us now suppose the price level increases from the original P_2 level to P_3. The interest rate rises, while the real value of wealth falls, and reduced competitiveness lowers net export expenditures. The investment, net export and consumption schedules fall, shifting the aggregate expenditures schedule downwards from $(C + I + G + NX)_2$ to $(C + I + G + NX)_3$ where real output is GDP_3. This permits us to locate a third point on the aggregate demand curve of Figure 8.2(b), namely point 3', where the price level is P_3 and real output is GDP_3.

To summarise—a decrease/increase in the price level shifts the aggregate expenditures schedule upwards/downwards and thereby increases/decreases the equilibrium real GDP. The resulting price level – real GDP combinations yield various points such as 1', 2' and 3', which locate a given down-sloping aggregate demand curve.

DETERMINANTS OF AGGREGATE DEMAND

Thus far we have found that changes in the price level cause changes in the level of spending by domestic consumers, businesses, government and foreign buyers in such a way that we can predict changes in the amount of real domestic output; that is, an increase in the price level, other things being equal, decreases the quantity of real domestic output demanded. Conversely, a decrease in the price level increases the amount of real output desired. This relationship is represented graphically as point-to-point movements along a stable aggregate demand curve. However, if one or more of those 'other things' change, the entire aggregate demand curve shifts position. We refer to these 'other things' as **determinants of aggregate demand**; they 'determine' the location of the aggregate demand curve.

To understand what causes changes in domestic output, we must distinguish between changes in the quantity of real output demanded caused by changes in the price level and changes in aggregate demand caused by changes in one or more of the determinants of aggregate demand. You will recall that we drew a similar distinction when discussing single-product demand curves in Chapter 3.

As shown in Figure 8.3, an increase in aggregate demand is depicted by the rightward movement of the curve from AD_1 to AD_2. This shift indicates that, at each price level, the desired amount of real goods and services is larger than before. Alternatively, a decrease in aggregate demand is shown as the leftward shift of the curve from AD_1 to AD_3. This shift tells us that people desire to buy less real output at each price level than previously.

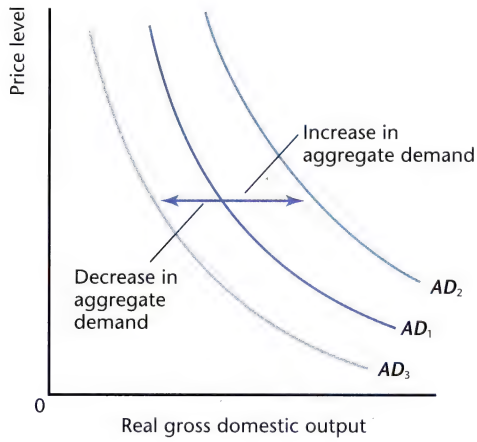


FIGURE 8.3
Changes in aggregate demand

A change in one or more of the determinants of aggregate demand listed in Table 8.1 will change aggregate demand. An increase in aggregate demand is shown as a rightward shift of the *AD* curve from AD_1 to AD_2, and a decrease in aggregate demand as a leftward shift from AD_1 to AD_3.

To repeat: the changes in aggregate demand shown in the figure occur when there are changes in one or more of the factors previously assumed to be constant. These determinants of aggregate demand are listed in Table 8.1. Let us examine each element of the table in the order shown.

CONSUMER SPENDING

Independently of changes in the price level, domestic consumers may collectively alter their purchases of Australian-produced real output. When this happens, the entire aggregate demand curve shifts. It shifts leftwards, as from AD_1 to AD_3 in Figure 8.3, when consumers buy less output than before at each possible price level; it moves rightwards, as from AD_1 to AD_2, when they buy more at each possible price level.

Changes in one or more of several non-price-level factors may change consumer spending and therefore shift the aggregate demand curve. As indicated in Table 8.1, these factors are real consumer wealth, consumer expectations, consumer indebtedness and taxes.

Consumer wealth

Consumer wealth means all the assets owned by consumers, including financial assets such as stocks and bonds and physical assets such as houses and land.

A sharp decline in the real value of consumer assets encourages people to save more (buy fewer products) to restore their wealth. The resulting decline in consumer spending decreases aggregate demand—that is, shifts the aggregate demand curve leftwards. Conversely, an increase in the real value of consumer wealth increases consumption spending at each price level; the aggregate demand curve shifts rightwards.

An important warning—we are *not* referring here to the previously discussed wealth effect or real-balances effect, which assumes a fixed aggregate demand curve and results from a change in the price level; it is a non-price-level factor that shifts the entire aggregate demand curve. An example would be a sharp increase in stock prices that increases consumer wealth, even though the price level has not changed. Similarly, a sharp decline in the real value of houses and land reduces consumer wealth, independently of changes in the general price level.

Table 8.1 Determinants of aggregate demand: factors that shift the aggregate demand curve

1	**Changes in consumer spending**
	(a) Consumer wealth
	(b) Consumer expectations
	(c) Consumer indebtedness
	(d) Taxes
2	**Changes in investment spending**
	(a) Interest rates
	(b) Profit expectations on investment projects
	(c) Business taxes
	(d) Technology
	(e) Degree of excess capacity
3	**Changes in government spending**
4	**Changes in net export spending**
	(a) Foreign GDP growth
	(b) The level of the exchange rate

Consumer expectations

Changes in consumer expectations about the future usually change consumer spending. When people expect their future real income to rise, they spend more of their current income. Present consumption spending increases (present saving falls), and the aggregate demand curve shifts rightwards. Conversely, an expectation that real income will decline in the future reduces present consumption spending and, therefore, aggregate demand.

Similarly, a widely held expectation of surging future inflation increases aggregate demand today, because consumers buy products before prices escalate. Conversely, expectation of lower price levels in the near future may reduce present consumption, in that people postpone some of their present consumption to take advantage of the future lower prices.

Consumer indebtedness

Consumers with high levels of indebtedness from past buying sprees financed by credit may be forced to cut present spending to pay off existing consumer debt. The result is a decline in consumption spending and a leftward shift of the aggregate demand curve. Conversely, when consumers' indebtedness is relatively

low, their present consumption spending increases. This produces an increase in aggregate demand.

Taxes

A reduction in personal income tax rates increases take-home income and increases consumer purchases at each possible price level; that is, tax cuts shift the aggregate demand curve rightwards. Tax increases, on the other hand, reduce consumption spending and shift the aggregate demand curve leftwards.

INVESTMENT SPENDING

Investment spending—the purchase of capital goods—is a second determinant of aggregate demand. A decline in the amount of new capital goods desired by businesses at each price level shifts the aggregate demand curve leftwards. Conversely, an increase in the desired amount of investment goods increases aggregate demand. Let us consider the factors that can alter the level of investment spending as listed in Table 8.1.

Interest rates

All else being equal, an increase in the interest rate caused by a factor other than a change in the price level will lower investment spending and reduce aggregate demand. We are not referring here to the so-called 'interest-rate effect' occurring due to a change in the price level. Instead, we are referring to a change in the interest rate resulting from, say, a change in the nation's monetary policy. A tightening of monetary policy increases the interest rate and reduces investment.

Profit expectations on investment projects

Improved profit expectations on investment projects increase the demand for capital goods and shift the aggregate demand curve rightwards. For example, an anticipated rise in spending by consumers may, in turn, improve the profit expectations of possible investment projects. Alternatively, if the profit outlook on possible investment projects dims because of an expected decline in consumer spending, investment spending will also decline.

Business taxes

An increase in business taxes reduces after-tax profits from corporate investment and reduces investment spending and aggregate demand. Conversely, tax reductions increase after-tax profits from corporate investment, increase investment spending, and push the aggregate demand curve rightwards.

Technology

New and improved technologies stimulate investment spending and increase aggregate demand. For example, recent advances in the high-tech fields of microbiology and electronics have spawned new laboratories and production facilities to exploit the new technologies.

Degree of excess capacity

A rise in excess capacity—unused existing capital—retards the demand for new capital goods and reduces aggregate demand. Firms operating factories at well below capacity have little incentive to build new factories. Alternatively, when firms collectively discover that their excess capacity is dwindling, they build new factories and buy more equipment. Hence, investment spending rises and the aggregate demand curve shifts to the right.

GOVERNMENT SPENDING

Government's desire to buy goods and services is a third determinant of aggregate demand. An increase in government purchases of domestic output at each price level increases aggregate demand as long as tax collections and interest rates do not change so as to reduce other categories of expenditure equally. An example of expansionary government spending would be the decision to revitalise the nation's railway system. Conversely, a reduction in government spending, such as a reduction in government funding of universities, reduces aggregate demand.

NET EXPORT SPENDING

The final determinant of aggregate demand is net export spending (net exports). When foreign consumers change their purchases of Australian goods and services independently of changes in our price level, the Australian aggregate demand curve shifts as well. We again specify 'independent of changes in our price level' to distinguish clearly from changes in spending associated with the foreign-purchases effect. Increases in net exports (exports minus imports), caused by factors other than changes in the Australian price level, push our aggregate demand curve rightwards. Increases in the level of exports constitute increased foreign demand for Australian goods and services, and a reduction in the level of imports implies an increased domestic demand for Australian products.

The non-price-level factors that alter net exports are, primarily, the level of foreign GDP growth, and the level of the exchange rate.

Foreign GDP growth

Rising incomes in countries that are Australia's trading partners increase aggregate demand in Australia. As the income levels rise in Australia's trading partners, their citizens can afford to buy more products made both in their home country and in Australia. Our exports will therefore rise in step with increases in the national incomes of our trading partners. Declines in national income abroad have the opposite effect—our net exports will decline, shifting the aggregate demand curve leftwards.

Exchange rates

A change in the exchange rate between the Australian dollar and other currencies is a second factor affecting net exports and, hence, aggregate demand. If the Australian dollar price of yen rises, this would mean a depreciation of the Australian dollar against the yen. Viewed differently, if the yen price of an Australian dollar falls, this means the yen appreciates against the Australian dollar. The new relative values of Australian dollars and yen mean consumers in Japan can obtain more Australian dollars with any given number of yen. Similarly, consumers in Australia will obtain fewer yen for each of their dollars.

As a result, Japanese consumers will discover that Australian goods and services are cheaper in terms of yen. Australian consumers will find, meanwhile, that fewer Japanese products can be purchased with a given number of their dollars. With respect to our exports, a $90 Australian-made jumper might now be bought for 8100 yen compared to 9450 yen previously. In terms of our imports, a Japanese car might now cost $16 330 instead of $14 000. In these circumstances, our exports will rise and imports will fall. This increase in net exports translates into an increase in Australian aggregate demand. Think through the opposite scenario in which the Australian dollar appreciates (the yen depreciates).

Business IMPLICATION

INFORMATION IN INVENTORY CHANGES



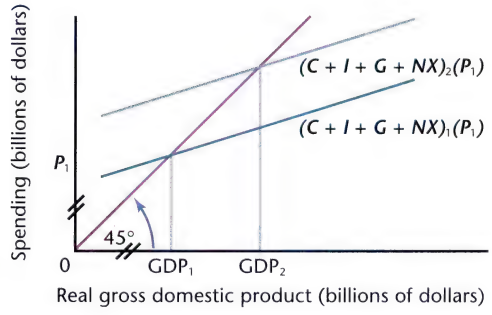
Economists have traditionally used a variety of measures as indicators of the level of economic activity. One of these is the level of inventories held by business. As we know from our models, a slowing of economic growth is associated with an increase in inventory levels, while an increase in the pace of economic growth is associated with a falling of inventory levels. So says traditional theory.

What happens, however, as technology starts to have a greater impact on inventory management? What are the implications of the trend towards a services-based and knowledge-based economy? A move towards just-in-time (JIT) inventory management tends to reduce the size of inventories held by businesses that adopt JIT practices, regardless of the level of economic activity. Services-based and knowledge-based businesses may, in general, require less physical inventory to operate than conventional businesses do. The implications? That inventory levels may become a less relevant indicator of economy-wide changes in the rate of economic growth. They will still, however, provide a useful indicator of the state of the manufacturing sector.

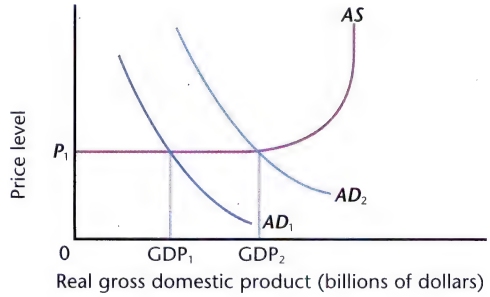
AGGREGATE DEMAND SHIFTS AND AGGREGATE EXPENDITURES[2]

We know that changes in the determinants of aggregate demand in Table 8.1 represent changes in the aggregate expenditures that underlie our aggregate expenditures – income model of Chapters 6 and 7. What happens if we hold the price level constant and consider shifts in aggregate expenditures caused by changes in these non-price-level determinants of consumption, investment and net exports? The answer is that the entire aggregate demand curve shifts rightwards or leftwards.

Consider Figure 8.4. We begin with the aggregate expenditures schedule at $(C + I + G + NX)_1$ in Figure 8.4(a), yielding a real domestic output of GDP_1. Assume now that a technological improvement or more optimistic business expectations cause the investment schedule to shift upwards so that the aggregate expenditures schedule rises from $(C + I + G + NX)_1$ to $(C + I + G + NX)_2$. (P_1 in brackets reminds us that the price level is assumed to be constant.) The result, we know, will be a multiplied final increase in real GDP from GDP_1 to GDP_2. In Figure 8.4(b) this is reflected in a total increase in aggregate demand from AD_1 to AD_2, showing the *same* multiplied increase in real GDP from GDP_1 to GDP_2. Note that the change in real GDP depicted in Figure 8.4(b) is associated with the



a. Aggregate expenditures – output model



b. Aggregate demand – aggregate supply model

FIGURE 8.4
Shifts in the aggregate expenditures schedule and in the aggregate demand curve

In (a) we assume that some determinant of consumption or investment other than the price level shifts the aggregate expenditures schedule from $(C + I + G + NX)_1$ to $(C + I + G + NX)_2$, thereby increasing real domestic output from GDP_1 to GDP_2. In (b) we find that the aggregate demand counterpart of this is a rightward shift of the aggregate demand curve from AD_1 to AD_2, which is just sufficient to show the same increase in real output as in the expenditures–output model.

constant price level P_1 because we are in the horizontal range of the simple aggregate supply curve presented in Chapter 5. We will discuss the implications of changes in the price level for the multiplier shortly, and introduce a more realistic model of aggregate supply in the next section of this chapter.

Clearly, the multiplier process defines the total size of the shift of the aggregate demand curve in the aggregate demand – aggregate supply model just as it defines the size of the final change in aggregate expenditures and income in the aggregate expenditures model (see Figure 8.4). In terms of the aggregate demand – aggregate supply model, this may be reinterpreted as follows: an initial change in one of the non-price-level determinants of demand (Table 8.1) leads to a multiplied final change in aggregate demand at all possible price levels. Thus, if the multiplier is 4, an initial increase of $5 billion in planned investment expenditure, resulting in a $5 billion initial rightward shift of the aggregate demand curve, results in a total rightward shift of the aggregate demand curve by $20 billion. In general:

shift in *AD* curve = initial change in spending × multiplier



Concept highlights

- The aggregate demand curve shows the level of real domestic output that will be purchased at each possible price level. The rationale for the down-sloping aggregate demand curve is based upon the interest-rate effect, the real-balances effect and the foreign-purchases effect.
- The interest-rate effect indicates that a higher price level will result in increased interest rates due to either an up-sloping supply curve for money or higher rates being charged by lenders of funds and investors to compensate them for the erosion of their purchasing power. Increased interest rates reduce consumption and investment purchases that are interest-rate sensitive.
- The real-balances effect indicates that inflation will reduce the real value or purchasing power of fixed-value financial assets held by households and cause them to cut back on their consumer spending.
- The foreign-purchases effect suggests that an increase/decrease in Australia's price level relative to other countries will reduce/increase the net exports component of aggregate demand.
- The down-sloping aggregate demand curve can be derived from the aggregate expenditures – output model by varying the price level and determining how the consequent shifts in aggregate expenditures alter the equilibrium level of real domestic output.
- Shifts in the aggregate demand curve are associated with shifts in the aggregate expenditures curve caused by changes in the non-price-level determinants of consumption, investment or net exports.
- The determinants of aggregate demand are spending by domestic consumers, businesses, government, and foreign buyers.
- Changes in the factors listed in Table 8.1 cause changes in spending by these groups and shift the aggregate demand curve.

AGGREGATE SUPPLY

Aggregate supply curve: indicates the level of real domestic output that will be produced at each possible price level.

The **aggregate supply curve** indicates the level of real domestic output that will be produced at each possible price level. Higher price levels create an incentive for enterprises to produce and sell additional product, while lower price levels are associated with a reduction in output. As a result, the relationship between the price level and real GDP is generally seen to be direct or positive. In fact, in Chapter 5 and earlier in this chapter, we presented an aggregate supply curve that, while generally up-sloping and consistent with these ideas, embodied three

quite distinct segments or ranges: the horizontal; the intermediate; and the vertical ranges. The shape of this aggregate supply curve reflected what happens to production costs as the domestic output expands or contracts.

However, this simple model is not completely consistent with some of the observed features of our macroeconomy. You may recall the discussions of the natural rate of unemployment and potential output in Chapter 5. These concepts suggest that at any point in time, there are long-run constraints on the amount of output that we may consistently produce without generating an inflationary gap. However, these concepts are also rather flexible. Thus, in the short run we may be able to exceed the economy's 'potential'—think in terms of sustainable—level of output and income. In short, the simplified aggregate supply curve—with its horizontal range, intermediate range, and vertical range—needs to be refined. We must distinguish between short-run and long-run aggregate supply, if we are to adequately model the behaviour of our economy. We will continue this discussion in Chapters 14 and 15.

DEFINITIONS: SHORT RUN AND LONG RUN

As used here, the *short run* is a period in which input prices—particularly nominal wages—remain fixed in the presence of a change in the price level. There are two basic reasons why wages may remain constant for a time even though the price level has changed:

1. Workers may not immediately be aware of the existence of a higher or lower price level. If so, they will not know that their real wages have changed and will not adjust their wage demands accordingly.
2. Many employees are hired under conditions of fixed wage contracts. Unionised workers, for example, receive nominal wages based on the terms of their awards. Other workers have their nominal wages established under enterprise agreements. Additionally, most managers and many professionals receive set salaries established through contracts.

The result of the lack of information about the price level and the existence of awards and set salaries is that changes in the price level normally do not immediately change nominal wages.

The *long run* is a period in which input prices—particularly wages and salaries—are fully responsive to changes in the price level. Given sufficient time, workers can gain full information about price-level changes and consequently ascertain the effects on their real wage. Workers will be aware that a price-level increase has reduced their real wage and that a price-level decline has increased their real wage. More importantly, in the long run workers and employers are freed from their existing labour contracts and can negotiate changes in nominal wages and salaries.

SHORT-RUN AGGREGATE SUPPLY

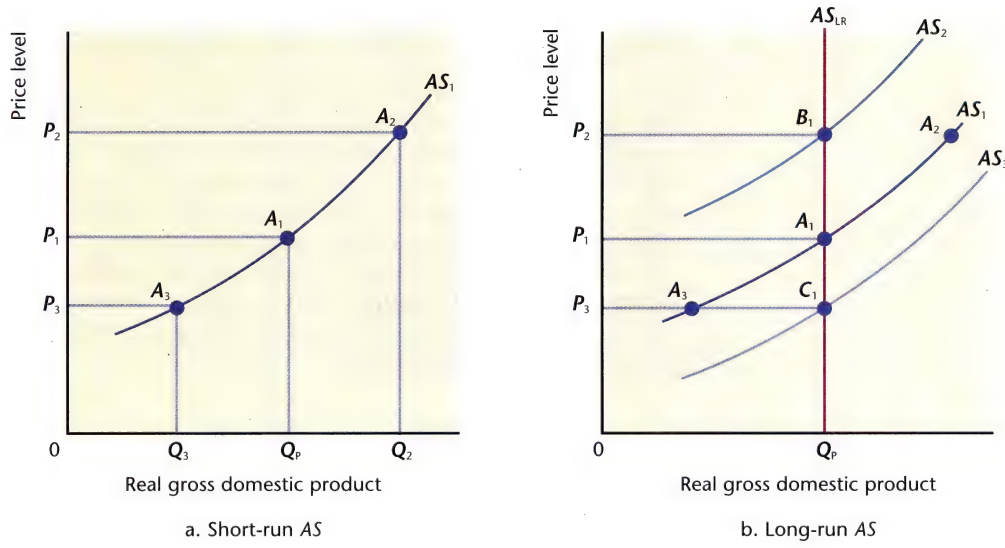
Consider the **short-run aggregate supply curve** shown as AS_1 in Figure 8.5(a). This curve is constructed on the basis of two assumptions:

1. The initial price level is P_1.
2. Nominal wages have been established on the expectation that the price level P_1 will persist.

You will observe from point A_1, and from the vertical and horizontal lines that meet at it, that the economy is operating at its potential level of output Q_P, and at price level P_1. This potential real output is the real production forthcoming when the economy is operating at its natural rate of unemployment.

FIGURE 8.5
Short-run and long-run aggregate supply

(a) In the short run, input prices such as nominal wages are assumed to be fixed, and are based on price level P_1. An increase in the price level will improve profits and entice firms to expand real output. Alternatively, a decrease in the price level will reduce profits and real output. The short-run *AS* curve (AS_1) therefore slopes upwards. (b) In the long run, a price-level rise will increase nominal wages and thus shift the short-run *AS* curve leftwards from AS_1 to AS_2. Conversely, a decrease in the price level will reduce nominal wages and shift the short-run *AS* curve rightwards from AS_1 to AS_3. The long-run *AS* curve (AS_{LR}) may therefore be thought of as being vertical.



a. Short-run *AS*

b. Long-run *AS*

Now let us determine the consequence of changes in the price level by initially examining an increase in the price level from P_1 to P_2. Because nominal wages are fixed in the short run, the higher product prices associated with P_2 will enhance profits. In response to the higher profits, producers will increase their output from Q_P to Q_2, as indicated by the move from A_1 to A_2 on AS_1. You will observe that at Q_2 the economy is operating above its potential output level. This is made possible by extending work hours for part-time and full-time employees, enticing new workers such as homemakers and retirees into the labour force, and hiring and training the structurally unemployed. Thus the nation's unemployment rate will fall below its natural rate.

How will producers respond when there is a decrease in the price level from P_1 to P_3? Firms will discover their profits have diminished or disappeared. After all, product prices have dropped, while nominal wages have not. Producers will therefore reduce employment and production and, as revealed by point A_3, real output will fall to Q_3. This decline in real output will be associated with an unemployment rate greater than the natural rate.

LONG-RUN AGGREGATE SUPPLY

By definition, nominal wages are assumed to be fully flexible in the long run in response to changes in the price level. What are the implications of this assumption for aggregate supply?

See Figure 8.5(b), and again assume that the economy is initially at point A_1 (P_1 and Q_P). Our previous discussion indicated that an increase in the price level from P_1 to P_2 will move the economy from point A_1 to A_2 along the short-run aggregate supply curve AS_1. In the long run, workers will discover that their real wages have fallen as a result of this increase in the price level. They will therefore, presumably, respond by demanding higher nominal wages so as to restore their previous level of real wages. The short-run aggregate supply curve will shift leftwards from AS_1 to AS_2, and will now reflect the higher price level P_2 and the expectation that P_2 will continue. Figure 8.5(b) shows that the leftward shift in the short-run aggregate supply to curve AS_2 will move the economy from A_2 to B_1. Real output will fall to its potential level and the unemployment rate will return to its natural rate.

Conversely, a decrease in the price level from P_1 to P_3 in Figure 8.5(b) will produce the opposite scenario. As previously noted, the economy will initially move from point A_1 to point A_3, at which profits will be squeezed or eliminated because prices have fallen and nominal wages have not. But this is simply the short-run response. Given enough time, the lower price level P_3—which has increased the real wage—together with the higher unemployment associated with the reduction in real output, will diminish nominal wages. We know that sufficiently lower nominal wages will shift the short-run aggregate supply curve rightwards from AS_1 to AS_3 and real output will return to Q_P at point C_1.

When we trace a line between the long-run equilibrium points B_1, A_1 and C_1, a **long-run aggregate supply curve** appears. Observe that it is vertical at the level of potential output, Q_P, a level of output consistent with the economy's natural rate of unemployment.

DETERMINANTS OF AGGREGATE SUPPLY

Our discussion of the short-run and long-run aggregate supply curves revealed that real domestic output increases in the short run as the economy moves from left to right up the short-run aggregate supply curve. In the long run, we cannot, however, exceed the economy's potential output level.

Changes in output that result from movements along the short-run aggregate supply curve must be distinguished from shifts in the short-run aggregate supply curve itself. Changes in output that reflect changes in the long-run aggregate supply curve's position must also be identified. An existing short-run or long-run aggregate supply curve identifies the relationship between the price level and real domestic output, other things being equal. But when one or more of these 'other things' change, these aggregate supply curves may themselves shift.

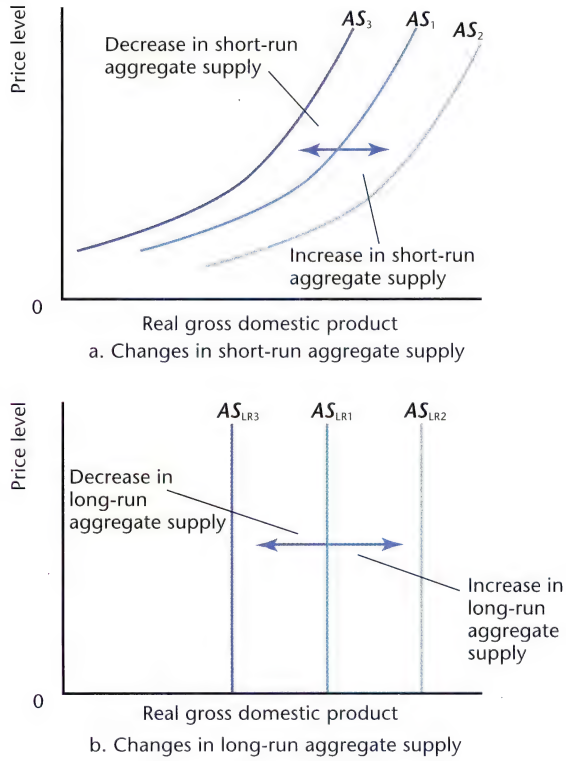


FIGURE 8.6
Changes in short-run and long-run aggregate supply curves

A change in one or more of the determinants of aggregate supply listed in Table 8.2 will cause a change in either the short-run aggregate supply curve or both the short-run and long-run aggregate supply curves. As in (a), an increase in short-run aggregate supply is shown as a rightward shift of the AS curve from AS_1 to AS_2, and a decrease in short-run aggregate supply as a leftward shift from AS_1 to AS_3. As in (b), an increase in long-run aggregate supply is shown as a movement from AS_{LR1} to AS_{LR2}. A decrease is shown as a movement from AS_{LR1} to AS_{LR3}.

The shift of the short-run aggregate supply curve from AS_1 to AS_2 in Figure 8.6(a) shows an increase in short-run aggregate supply. This shift is rightwards, indicating that businesses collectively will produce more real output at each price level than previously. For convenience, we will refer to an increase in short-run or long-run aggregate supply as a 'rightward' shift of the curve rather than a 'rightward or downward' shift. Conversely, the shift of the short-run aggregate supply curve from AS_1 to AS_3 will be referred to as a 'leftward shift', indicating a decrease in aggregate supply; that is, businesses now will produce less real

output at each price level than before (or charge higher prices at each level of output).

In a similar fashion, we can show increases in long-run aggregate supply as rightward shifts in the long-run aggregate supply curve. This is illustrated in Figure 8.6(b) by a move in the long-run aggregate supply curve from AS_{LR1} to AS_{LR2}. Similarly, we can observe decreases in long-run aggregate supply as leftward shifts in the long-run aggregate supply curve from AS_{LR1} to AS_{LR3}.

Table 8.2 summarises the 'other things' that shift the aggregate supply curve when they change. These factors are called **determinants of aggregate supply** because they collectively 'determine' or establish the location of the aggregate supply curves.

These determinants have one thing in common—when they change, per-unit production costs also change, shifting the short-run aggregate supply curve. In some cases, the potential output level of the economy also changes, resulting in shifts in the long-run aggregate supply curve.

Table 8.2 Determinants of aggregate supply: factors that shift the aggregate supply curves

Change in factor	Impacts on short-run (SR) or long-run (LR) aggregate supply
1 Changes in input prices	
(a) Domestic resource availability	SR and LR
– land	
– labour	
– capital	
– entrepreneurial ability	
(b) Prices of imported resources	SR (possibly LR)
(c) Market power	SR (possibly LR)
2 Changes in productivity	SR and LR
3 Changes in the legal and institutional environment	SR and LR
(a) Business taxes and subsidies	
(b) Government regulation	

The point is that there are factors other than changes in real domestic output that alter per-unit production costs, and which may alter the potential for the economy to produce (see Table 8.2). When one or more factors change, per-unit production costs change at each price level and the short-run aggregate supply curve shifts positions. Specifically, decreases in per-unit production costs of this type shift the short-run aggregate supply curve rightwards. Conversely, increases in per-unit production costs shift the short-run aggregate supply curve leftwards. When per-unit production costs change for reasons other than a change in domestic output, firms collectively alter the amount of domestic output they produce at each price level.

We will now examine how changes in the aggregate supply shifters listed in Table 8.2 affect per-unit production costs and thereby shift the aggregate supply curve.

INPUT PRICES

Input or resource prices—to be distinguished from the output prices comprising the price level—are an important determinant of aggregate supply. All else being equal, higher input prices increase per-unit production costs and therefore reduce aggregate supply. Lower input prices produce just the opposite result. The following factors influence input prices: domestic resource availability, the prices of imported resources, and market power.

Domestic resource availability

We noted in Chapter 2 that a society's production possibility curve shifts outwards (rightwards) when the resources available to it increase. Rightward shifts in the production possibilities curve translate into rightward shifts of our long-run aggregate supply curve. Increases in the supply of domestic resources lower input prices and, as a result, per-unit production costs fall, and the short-run aggregate supply curve moves rightwards. Thus, at any given price level, firms collectively will produce and offer for sale more real domestic output than before. Conversely, declines in resource supplies increase input prices and reduce the economy's ability to produce output, shifting the short-run and long-run aggregate supply curves to the left.

How could changes in the availability of land, labour, capital, and entrepreneurial resources work to shift the aggregate supply curve? Several examples will help answer this question.

Land

More land resources could become available through discoveries of mineral deposits, irrigation of land, or technological innovations that permit us to transform what were previously 'non-resources' into valuable factors of production. An increase in the supply of land resources will lower the price of land inputs and thus lower per-unit production costs. For example, the relatively recent discovery that widely available materials at low temperatures can act as superconductors of electricity is expected eventually to reduce per-unit production costs by reducing electricity loss during transmission. This lower price of electricity will increase both short-run and long-run aggregate supply.

Two examples of reductions in land resources availability may also be cited: the widespread loss of agricultural land through salinity; and the nation's loss of topsoil through intensive farming. Eventually, each of these problems may increase input prices and shift the long-run and short-run aggregate supply curves leftwards.

Labour

Around 70 per cent of all business costs are wages or salaries. All else being equal, changes in wages thus have a significant impact on per-unit production costs and on the location of the aggregate supply curve. An increase in the availability of labour resources reduces the price of labour; a decrease raises labour's price. We also need to recognise that shifts in the supply of labour also affect the potential output of society. For example, the immigration of employable workers from abroad has historically increased the availability of labour in Australia. Conversely, the great loss of life during World War I greatly diminished the post-war availability of labour in Australia, tending to raise per-unit production costs and reduce the potential output level.

Capital

Long-run and short-run aggregate supply tends to increase when society adds to its stock of capital. Such an addition would happen if society saved more of its

income and directed the savings towards the purchase of capital goods. In much the same way, an improvement in the quality of capital reduces production costs and increases short-run and long-run aggregate supply. For example, businesses have over the years replaced poor-quality equipment with new, superior equipment.

Conversely, short-run and long-run aggregate supply declines when the quantity and quality of the nation's stock of capital diminish. For example, in the depths of the Great Depression of the 1930s, our capital stock deteriorated because new purchases of capital were insufficient to offset the normal wearing out and obsolescence of plant and equipment.

Entrepreneurial ability

Finally, the amount of entrepreneurial ability available to the economy can change from one period to the next and shift the aggregate supply curve. Recent media focus on individuals who have amassed fortunes through entrepreneurial efforts might conceivably increase the number of people who have entrepreneurial aspirations, tending to shift the aggregate supply curves rightwards.

Prices of imported resources

Just as foreign demand for Australian goods and services contributes to our aggregate demand, the importation of resources from abroad adds to our aggregate supply. Resources add to our productive capacity, whether they be domestic or imported. Imported resources reduce input prices and therefore decrease the per-unit cost of producing Australian real domestic output. Generally, a decrease in the prices of imported resources expands our short-run aggregate supply; an increase in the prices of these resources reduces our short-run aggregate supply. Inasmuch as these resources are not available locally, shifts in their prices and availability may affect the long-run supply curve in a similar fashion.

Exchange rate fluctuations are a factor that periodically alters the price of imported resources, especially capital goods. Suppose that the Australian dollar price of foreign currency falls—that is, the dollar appreciates—enabling Australian firms to obtain more foreign currency with each Australian dollar. This means that Australian producers face a lower dollar price of imported resources. Under these conditions, Australian firms would expand their imports of foreign resources and realise reductions in per-unit production costs at each level of output. Falling per-unit production costs of this type shift the Australian short-run aggregate supply curve to the right.

Conversely, an increase in the Australian dollar price of foreign currency—a depreciation—raises the prices of imported resources. As a result, our imports of these resources fall, our per-unit production costs jump upward, and our short-run aggregate supply curve moves leftwards.

Market power

A change in the degree of market power held by sellers of resources can also affect input prices and short-run aggregate supply. Market power is the ability to set a price above that which would occur in a competitive situation. The rise and fall of OPEC's market power during the past two decades is a good illustration. The tenfold increase in the price of oil that OPEC achieved during the 1970s permeated our economy, drove up per-unit production costs, and jolted the Australian aggregate supply curve leftwards. Conversely, a substantial reduction in OPEC's market power during the mid-1980s reduced the cost of manufacturing

and transporting products and, as a direct result, increased Australian aggregate supply.

A change in the use of union market power may also be expected to affect the location of the aggregate supply curve. Some observers believe that unions exploited their market power in the 1970s to achieve large increases in award pay rates. These higher pay rates may well have increased per-unit production costs and produced leftward shifts of short-run aggregate supply. Alternatively, unions used their market power to control wage increases throughout much of the 1980s. Union power fell dramatically throughout the 1990s. Consequently, there may have been an increase in short-run aggregate supply during these two decades. If union practices restrict the productivity and availability of labour rather than just the price, this will affect the position of the long-run supply curve.

PRODUCTIVITY

Productivity: the relationship between real output and the quantity of inputs used to produce it, often measured as average real output per unit of input.

Productivity relates a nation's level of real output to the quantity of input used to produce that output. In other words, productivity is a measure of average output, or of real output, per unit of input:

$$\text{productivity} = \frac{\text{real output}}{\text{input}}$$

An increase in productivity means that more real domestic output can be obtained from the amount of resources—or inputs—currently available.

How does an increase in productivity affect the aggregate supply curves? We first need to discover how a change in productivity alters per-unit production costs. Suppose real domestic output in a hypothetical economy is 10 units, the input quantity needed to produce that quantity is 5, and the price of each input unit is \$2. Productivity—output per input—is 2 ($= \frac{10}{5}$). The per-unit cost of output would be found through the following formula:

$$\text{per-unit production cost} = \frac{\text{total input cost}}{\text{units of output}}$$

In this case, per-unit cost is \$1, found by dividing \$10 of input cost ($= \$2 \times 5$ units of input) by 10 units of output.

Now, suppose that real domestic output doubles to 20 units, while the input price and quantity remain constant at \$2 and 5 units; that is, suppose productivity rises from 2 ($= \frac{10}{5}$) to 4 ($= \frac{20}{5}$). Because the total cost of the inputs stays at \$10 ($= \$2 \times 5$ units of input), the per-unit cost of the output falls from \$1 to \$0.50 ($= \frac{\$10 \text{ of input}}{20 \text{ units of output}}$).

By reducing per-unit production costs, an increase in productivity shifts the short-run aggregate supply curve rightwards; conversely, a decline in productivity increases per-unit production costs and shifts the short-run aggregate supply curve leftwards.

In terms of the long-run aggregate supply curve, an increase in productivity means that we can get more output from our available supply of resources. The result: a rightwards shift of the long-run aggregate supply curve.

We will discover in Chapter 16 that productivity growth is a major factor in explaining the secular expansion of aggregate supply in Australia and the corresponding growth of real domestic output. The use of more machinery and equipment per worker, improved production technology, a labour force that is better educated and trained, and improved forms of business enterprises have interacted to raise productivity, all else being equal, and increase long-run aggregate supply.

Business IMPLICATION INFLATION AND BUSINESS PROFITABILITY



It needs to be recognised by businesses that operation in a low-inflation environment requires different business strategies from those required for business in a high-inflation economy. The reasons? A high-inflation environment allows businesses to easily pass on increases in costs that arise from wage and input price increases. Indeed, the recognition of this ability may actually lead to companies negotiating these increases a little more easily. If all prices are increasing fairly rapidly, the impact of your actions on company profitability will be quickly offset by price rises in the rest of the economy. Additionally, there is often money to be made through rapidly rising asset prices. Businesses may, therefore, be distracted from their core activities due to the temptation to purchase assets for speculative capital gain.

Under a low-inflation situation many of the above possibilities are lost. Competitors' prices may not be rising rapidly. Customers will more easily identify when your prices are increasing relative to those of your competitors. Speculation on existing assets may not be profitable due to the more limited potential for capital gains. The results? Greater care must be taken when agreeing to increases in input prices. It may not be possible to pass on these increases to customers. In other words, business profits will need to be generated from core business activities, not sidelines. Those businesses that understand what they do best will have the best chances of success.

LEGAL AND INSTITUTIONAL ENVIRONMENT

Changes in the legal and institutional setting in which businesses collectively operate may alter per-unit costs of output and shift the aggregate supply curves. Two categories of changes of this type are:

1. changes in taxes and subsidies
2. changes in the extent of regulation.

Business taxes and subsidies

Higher business taxes, such as sales, excise and payroll taxes, increase per-unit costs and reduce short-run aggregate supply in much the same way as a wage increase does. For example, an increase in the payroll taxes paid by businesses increases production costs and reduces aggregate supply. Similarly, a business subsidy—a payment or tax break by government to firms—reduces production costs and increases aggregate supply.

Government regulation

It is usually costly for businesses to comply with government regulations. Hence, regulation increases per-unit production costs and shifts the short-run aggregate supply curve leftwards. 'Supply-side' proponents of deregulation of the economy have argued forcefully that, by increasing efficiency and reducing paperwork associated with complex regulations, deregulation will reduce per-unit costs. In this way, the short-run aggregate supply curve will supposedly shift rightwards. Conversely, increases in regulation raise production costs and reduce short-run aggregate supply.

However, the impact of extensive regulation falls not just on the cost of supply, but also on the ability to produce. Meeting regulatory requirements requires the use of resources and diverts these away from the production of

alternative goods and services. Thus, the long-run aggregate supply curve may be shifted to the left by increases in the resources required to conduct business in general. Of course, this potential loss to production must be traded off against any benefits derived from regulation.

Concept highlights

- The short-run aggregate supply curve shows the levels of real domestic output that will be produced at various possible price levels. In the short run—where nominal wages are fixed—an increase in the price level increases profits and real output. Conversely, a decrease in the price level reduces profits and real output. Thus the short-run aggregate supply curve is upward-sloping.
- The long-run aggregate supply curve shows us that we cannot consistently exceed the potential output level of the economy—that which coincides with the natural rate of unemployment. In the long run—where nominal wages are variable—increases in the price level raise nominal wages and shift the short-run aggregate supply curve leftwards. Conversely, declines in the price level shift the short-run aggregate supply curve rightwards. The long-run aggregate supply curve is therefore vertical at the potential level of output.
- As indicated in Table 8.2, the determinants of aggregate supply are input prices, productivity, and the legal and institutional environment.
- All else being equal, a change in one of these factors will change per-unit production costs at each level of output and therefore alter the location of the short-run aggregate supply curve.
- Changes in the determinants of aggregate supply that alter the productive potential of the economy will shift the long-run aggregate supply curve.

EQUILIBRIUM: REAL OUTPUT AND THE PRICE LEVEL

We found in Chapter 3 that the intersection of the demand for and the supply of a particular product would determine the equilibrium price and equilibrium output of that good. Similarly, as we see in Figure 8.7, the intersection of the aggregate demand and aggregate supply curves determines the **equilibrium real domestic output** and the **equilibrium price level**. In this case the point of intersection lies to the left of the long-run aggregate supply curve and potential output (Q_P) and the equilibrium real domestic output and price level are Q_e and P_e respectively. If the business sector had decided to produce a larger domestic output such as Q_2, it would be unable to dispose of that output; that is, aggregate demand would be insufficient to take that domestic output off the market. Faced with unwanted inventories of goods, and falling profits, businesses would reduce prices and cut back on output to the equilibrium level, as indicated by the leftward-pointing arrow.

Conversely, if businesses had only produced domestic output Q_1,

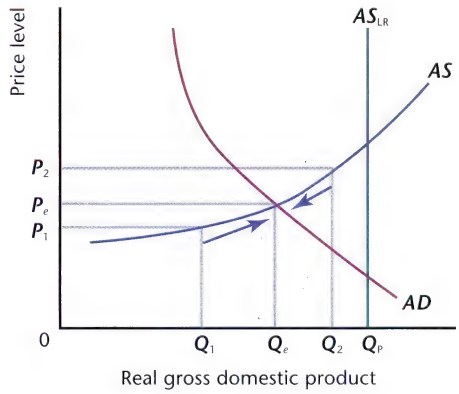


FIGURE 8.7
The equilibrium real domestic output and the equilibrium price level

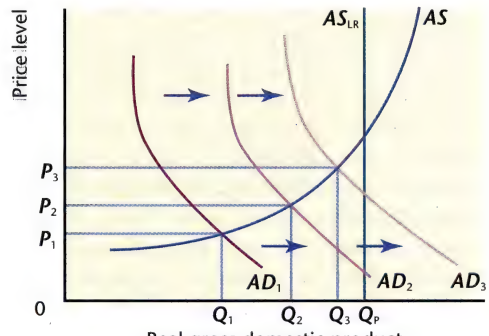
The intersection of the aggregate demand and aggregate supply curves determines the equilibrium real domestic output and the equilibrium price level. In this case, equilibrium is determined at a level of real domestic output lower than that associated with potential output (Q_P), with equilibrium output at Q_e and the equilibrium price level of P_e.

they would find that their inventories of goods would quickly diminish and their profits rise because sales of output would exceed production. Businesses would react by increasing production and prices, and domestic output would rise to equilibrium, as shown by the rightward-pointing arrow.

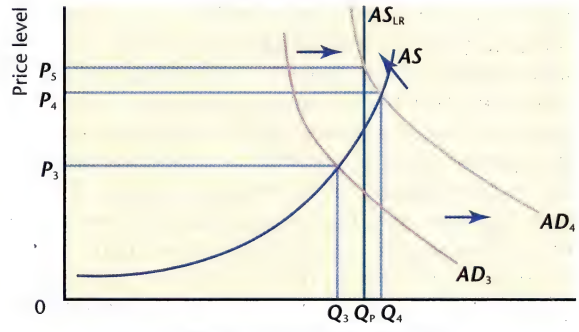
The next obvious step in our analysis is to shift the aggregate demand and aggregate supply curves and observe the effects on real output—and therefore employment—and on the price level. During our discussion we will discuss the impact of changes in some of the determinants of aggregate demand and aggregate supply on the equilibrium values of real domestic output and the price level.

SHIFTING AGGREGATE DEMAND

Suppose that households and businesses decide to increase their spending; that is, they choose to purchase a larger real output at each possible price level, so shifting the aggregate demand curve to the right. Our list of determinants of aggregate demand (see Table 8.1) provides several possible reasons for this decision. Perhaps expectations about future economic conditions become more optimistic. Households now feel more secure with respect to future employment and so they decide to consume more (and therefore save less) of their current incomes. Similarly, businesses anticipate that future business conditions will be more prosperous, and therefore increase their investments in capital goods to enlarge their productive capacities. As shown in Figure 8.8, the precise effects of an increase in aggregate demand depend on where the economy is currently on the short-run aggregate supply curve, and where it is relative to the potential level of output.



a. Low employment and price level



b. High employment and price level

FIGURE 8.8
The effects of increases in aggregate demand

The effects of an increase in aggregate demand depend upon the position on the short-run aggregate supply curve in which it occurs, and on the distance that the economy's output level is from its potential output level. As in (a), an increase in aggregate demand at low levels of output will increase real domestic output, but cause little change in the price level. In (b), as the economy approaches potential output, an increase in aggregate demand will increase the price level, but affect real domestic output relatively little. In the long term, output cannot permanently exceed that associated with full employment.

Consider positions where the levels of output are relatively distant from potential output, such as Q_1 in Figure 8.8(a). Here, there is a high level of unemployment and much idle productive capacity. The effect of an increase in aggregate demand (AD_1 to AD_2) is to bring about a large increase in real domestic output (Q_1 to Q_2) and employment with relatively little increase in the price level (P_1 to P_2).

The reason is as follows. Because the economy is in a severe recession or depression, there are large amounts of idle machinery and equipment and unemployed workers available. These idle resources—both human and property—can be put back to work with little upward pressure on the price level. As domestic output expands over this

range, no significant shortages or production bottlenecks will be incurred to cause prices to rise. Because producers can acquire labour and other inputs at fairly stable prices, production costs will not rise significantly as output is expanded, reducing the level of increase in product prices.

As aggregate demand increases further (AD_2 to AD_3), we will approach potential output (Q_P) in Figure 8.8(a), producing at output level Q_3. Here labour and capital are nearly fully employed. As shown in Figure 8.8(a), an increase in aggregate demand (AD_2 to AD_3) will have a relatively lower impact in raising real domestic output (Q_2 to Q_3) and a relatively larger impact on the price level (P_2 to P_3).

Why is this so? The basic reason is that the aggregate economy is in fact comprised of innumerable product and resource markets, and the full-employment level of output is not reached evenly or simultaneously in the various sectors or industries. Hence, as the economy expands in the Q_2Q_3 real output range, the high-tech computer industry may encounter shortages of skilled workers while the car or steel industries are still faced with substantial unemployment. Similarly, in certain industries raw material shortages or similar production bottlenecks may begin to appear. Expansion also means that some firms will be forced to utilise older and less efficient machinery as they approach capacity production. Less capable workers may be hired as output expands. For all of these kinds of reasons, production costs rise at a more rapid rate, and firms must increase product prices more rapidly for production to be profitable.

Finally, consider Figure 8.8(b), which illustrates the impact of an increase in aggregate demand (AD_3 to AD_4) as we approach potential output. The increase in aggregate demand will have a relatively small impact on real domestic output (Q_3 to Q_4) and a relatively large impact on the price level (P_3 to P_4). Note that in the short run we may exceed potential output, as shown in Figure 8.8(b). In the long run we will tend to move to a higher short-run aggregate supply curve and return to the economy's potential output level (Q_P).

How, you may ask, may we exceed the economy's level of potential output? Surely at the economy's full-employment output level, individual firms may try to expand production, but will succeed only by bidding resources away from other firms. The resources and additional production that one firm gains will be lost by some other firm. Resource prices (costs) and, ultimately, product prices will rise as a result of this process, but real domestic output will remain unchanged.

A distinct point must be made in connection with the concept of potential output. This is that 'full employment' and potential output are slippery concepts. This is true not merely because the 'full employment – unemployment rate' (the natural rate of unemployment) is difficult to quantify (see Chapter 5), but also because the hours of work and the size of the labour force can sometimes be expanded beyond what is normal. In a highly prosperous economy, daily working hours and the working week can be extended. Workers can also engage in *moonlighting*—the practice of holding more than one job. For example, during World War II a 10-hour working day and a 6-day working week were not uncommon. Many workers, after completing their normal working day, would work a partial or full night shift in a defence plant. Many of these workers, who would not ordinarily have worked, joined the labour force in response to patriotic appeals and high wages. But for our purposes it is acceptable to say there is some specific level of real output that corresponds to full employment.

Demand-pull inflation: inflation associated purely with shifts in aggregate demand, resulting from changes in the components of aggregate expenditures, along a stable short-run aggregate supply curve.

Price-level increases that occur as aggregate demand increases while aggregate supply is fixed constitute **demand-pull inflation**. Shifts in aggregate demand are pulling up the price level—the stable short-run aggregate supply curve suggests that most wage costs have not changed.

Asian FOCUS — INVESTMENT AND GROWTH

Investment spending is often seen as the basis for economic growth, both now and into the future. Investment to GDP (or GNP) ratios vary widely across the region, as do the growth rates of its economies.

Country	Gross domestic investment, 1997 (per cent of GDP)	Growth in GNP 1996–97 (per cent)
Australia	20	0.6
China, mainland	38	8.5
China, Hong Kong SAR	34	5.2
India	24	6.1
Indonesia	31	4.3
Japan	30	−2.3
Malaysia	43	7.5
New Zealand	22	0.9
Singapore	37	8.8
Thailand	35	−1.1
Vietnam	29	5.6
World	**23**	**3.2**

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. Graph the growth rate of GNP against the investment to GDP ratio for each of the separate countries in the table.
2. Does there appear to be a positive relationship between the investment to GDP ratio and the rate of economic growth? What is the possible source of this relationship?
3. Which countries have exceptionally large investment to GDP ratios? Discuss the factors that may help to explain the size of this ratio in each of these countries.

THE RATCHET EFFECT

Ratchet effect: the result of the tendency for prices of both products and resources to be individually 'sticky' or inflexible in a downward direction, leading to a loss in downward flexibility of the general level of prices.

What of decreases in aggregate demand? Our model predicts that as aggregate demand falls, real GDP will fall and so will the price level. But there is an important complicating factor that raises serious doubts about the predicted effects of declines in aggregate demand on prices. The reverse movements of aggregate demand—from AD_4 to AD_3 in Figure 8.8(b) and from AD_3 to AD_2 or AD_2 to AD_1 in Figure 8.8(a)—may not restore the initial equilibrium positions, at least in the short term. The complication is that prices both of products and resources tend to be 'sticky', or inflexible in a downward direction. What goes up in economics need not come down—at least not down to its original level. Hence economists talk of a **ratchet effect**, a ratchet being a mechanism that permits us to crank a wheel forwards but not backwards.

CAUSES

What might cause downward price inflexibility? The reasons for downward price inflexibility are complex.

Wages

An assumption of our short-run aggregate supply curve is that wages are fixed over the short-term period of analysis. Since wages, which typically constitute 70 per cent or more of a firm's total costs, are inflexible downwards, it may be extremely difficult for firms to reduce their prices and remain profitable. Additionally, as higher output levels are attained, companies tend to hire more workers. Bonuses will have been promised. Each of these factors will have tended to lock in a greater wage cost than previously existed.

Employers' interests

Wage inflexibility is reinforced by the fact that employers may not want to reduce employment levels in the face of a temporary decline in demand. The reasons are at least twofold. On the one hand, redundancies may well have an adverse impact on worker morale and hence on labour productivity (output per worker). While lower employment levels would tend to lower labour cost per unit of output, lower worker productivity obviously tends to increase unit labour costs.

Most employers have made an 'investment' in the training and experience of their present labour forces and in their acquisition. Were they to initiate a round of voluntary redundancies in the face of a decline in aggregate demand, they could expect to lose both some highly trained and some relatively unskilled workers. To the extent that the highly trained workers find jobs with other firms, the present employer would forgo any chance of getting a return on the investment made in their training. A better option might be to maintain workers on the basis of seniority. Generally, the less senior workers laid off will be the less skilled workers, in whom the employer's training investment is least. However, this does not always ensure that the most productive workers are maintained.

Monopoly power

Another part of the explanation of the downward stickiness of prices stems from the fact that in many industries firms have sufficient monopolistic power to resist price cuts when demand declines. Such firms may instead accept large cuts in production and employment as an alternative to price reductions.

Menu costs

Price changes are frequently costly to implement. Customers must be notified of changes, computer systems need their records adapted, new brochures may be required, and so on. The costs of implementing price changes—menu costs—discourage firms from changing prices in the short run. Thus, we expect price changes to be less frequent, and the costs of implementing these changes traded off against the profits forgone due to sales lost over the period.

The implication of downward price inflexibility is significant. We may effectively move to a higher short-run aggregate supply curve than that previously operated on, even in the absence of the re-negotiation of wage contracts.

SHIFTING AGGREGATE SUPPLY

The supply decisions of businesses are made upon the basis of costs. Businesses are profit seekers, and economic profits are the difference between product prices and unit production costs. It follows that anything that increases production costs

will necessitate a higher price level to induce the business sector to produce any given level of real domestic output; that is, higher production costs shift the aggregate supply curve leftwards (upwards), as from AS_1 to AS_3 in Figure 8.6(a). Conversely, declines in production costs shift the short-run aggregate supply curve rightwards (downwards), as from AS_1 to AS_2 in Figure 8.6(a).

CAUSES

What could cause costs to increase? A number of factors are suggested by our determinants of aggregate supply (see Table 8.2). Perhaps foreign suppliers might impose dramatic increases in the prices of our imported equipment. As higher prices permeate the economy, the costs of producing virtually every product will rise. Alternatively, government might start a comprehensive program to protect the environment and in so doing levy special taxes on polluters to make them bear the spillover costs they have been imposing on society. These additional taxes raise costs and move the short-run aggregate supply curve to the left.

Conversely, the discovery of new and cheaper energy supplies might reduce the cost of any real output level, and tend to shift the short-run aggregate supply rightwards. Similarly, lower taxes and lower interest rates mean lower costs and a rightward shift of the short-run aggregate supply curve.

You will observe that a shift in the aggregate supply curve may well involve a change in the potential level of real domestic output; that is, the vertical range shifts to the left or right. You will recall from Chapter 2 that increases in resource supplies and technological advances both tend to increase the maximum real output the economy is capable of producing. Examples of increases in resource supplies are increases in the supplies of labour through domestic population growth or immigration, and increases in the stock of capital through investment. The discovery of new and cheaper energy supplies provides a further example. This realisation of economic growth that was portrayed as a rightward shift of the production possibilities curve in Chapter 2 is reflected in the rightward shift of the long-run aggregate supply curve in our present analysis, as shown in Figure 8.6(b).

EFFECTS

Cost-push inflation: inflation associated purely with shifts in aggregate supply, due to cost factors, along a stable aggregate demand curve.

Let us now shift our attention from causes to the effects of shifts in the short-run aggregate supply curve. Note that, given aggregate demand, the effects of a leftward shift in short-run aggregate supply are doubly bad. When aggregate supply shifts from AS_1 to AS_2 in Figure 8.9, real domestic output declines from Q_1 to Q_2 and the price level rises from P_1 to P_2. Falling employment and inflation, the combination we previously labelled **stagflation**, will occur.

Once again, if we recall the discussion of types of inflation in Chapter 5, we will see that the price-level increase here is clearly **cost-push inflation**. Similarly, the shift of aggregate supply from AS_1 to AS_3 indicates an increase in real output from Q_1 to Q_3 and a simultaneous decline in the price level from P_1 to P_3.

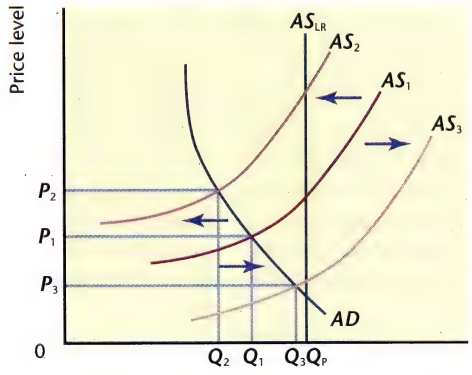


FIGURE 8.9
The effects of changes in aggregate supply

A leftward shift in short-run aggregate supply from AS_1 to AS_2 will cause stagflation, in that real domestic output will fall from Q_1 to Q_2 while the price level simultaneously increases from P_1 to P_2. A rightward shift of short-run aggregate supply from AS_1 to AS_3 will increase real domestic output from Q_1 to Q_3 and tend to reduce the price level from P_1 to P_3.

Concept highlights

- The intersection of the aggregate demand and short-run aggregate supply curves determines the equilibrium price level and real domestic output in the short run.
- In the long run the equilibrium level of real domestic output cannot exceed the economy's potential output.
- The aggregate demand curve may shift as a result of changes in any of its determinants. Given short-run aggregate supply, rightward shifts of aggregate demand increase real domestic output and employment as long as the economy is operating below the full-employment level of output. This comes at the cost of an increase in the price level.
- The magnitude of the impacts that increases in aggregate demand have on each of real domestic output and the level of prices depends on where the aggregate demand curve intersects the short-run aggregate supply curve, and the difference between the economy's output level and the potential output level.
- Inflation associated purely with shifts in the aggregate demand curve is known as demand-pull inflation.
- The ratchet effect is based upon the fact that prices are flexible upwards, but relatively inflexible downwards. Hence, an increase in aggregate demand raises the price level, but in the short term prices cannot be expected to fall when demand decreases.
- The short-run aggregate supply curve may shift when any of its determinants alters.
- Given aggregate demand, a rightward shift of the short-run aggregate supply curve will increase domestic output and employment and reduce prices, while a leftward shift will decrease equilibrium real output and employment and increase prices.
- Inflation associated purely with shifts in the aggregate supply curve is known as cost-push inflation.

Concept application

Following our consideration of the supply side of the economy and our recognition of sources of change in the general level of prices—inflation—we may now have some questions about the multiplier analysis of Chapter 7. In particular, we need to consider the impact of price-level changes on the value of the multiplier.

MULTIPLIER WITH PRICE-LEVEL CHANGES[3]

An examination of the size of the change in real GDP apparent in Figures 8.8(a) and (b) is in order at this point. We can see that the final change in the equilibrium levels of real GDP caused by shifts in the aggregate demand curve differ greatly within Figure 8.8. Indeed they reflect where the shift in aggregate demand occurs on the short-run aggregate supply curve, and the distance that the economy is from its potential output level. How do we account for these differences within the framework of our earlier multiplier analysis?

Figure 8.10 simplifies the analysis of Figures 8.8(a) and 8.8(b) by assuming the simple aggregate supply curve of Chapter 5. This allows us to focus our analysis on the situations where we are at an output level below potential output, but where increases in aggregate demand are associated with increases in the general level of prices.

At Q_1 in Figure 8.10, the economy is assumed to be in a severe recession (or depression) with ample excess productive capacity and a very high unemployment rate. Thus businesses are willing and able to produce more

output at existing prices. The change in aggregate demand from AD_1 to AD_2 will be translated fully into a change in real GDP and employment (Q_1 to Q_2) while the price level remains constant. In the horizontal range of our simple aggregate supply curve a 'full-strength' multiplier is at work as was the case in Chapters 6 and 7.

We now stress that, if the economy is in an upward-sloping section of the simple aggregate supply curve, a part or all of any initial increase in aggregate demand will be dissipated in inflation and therefore not reflected in increased real output and employment. In the vertical section of the curve, reflecting long-run potential output, all increases in aggregate demand will be dissipated in price-level rises. This matches the inflationary gap discussed in Chapter 7.

In Figure 8.10 the horizontal shift of the aggregate demand curve from AD_2 to AD_3 is the same absolute size as the shift from AD_1 to AD_2. However, a portion of the increase in aggregate demand is dissipated in inflation as the price level increases from P_1 to P_2 and, therefore, is not fully reflected in increased real output and employment. Inflation weakens the multiplier so that the actual increase in GDP, from Q_2 to Q', is less than it would be on the horizontal range of aggregate supply (Q_2 to Q_3). The interest-rate effect, real-balances effect and foreign-purchases effect can be used to explain this difference in outcomes.

Our conclusions are twofold. First, for any given initial increase in aggregate demand, the resulting increase in real GDP is smaller, the larger is the increase in the price level that results from the increase in aggregate demand. Price-level increases therefore weaken the multiplier. You should draw an increase in aggregate demand equal to the AD_1 to AD_2 shift in the vertical range of the aggregate supply curve to confirm that this increase in spending would be entirely dissipated in inflation. There would be no multiplier effect because real GDP would be unchanged. Our second and more general conclusion is that the aggregate expenditures – output model is not sufficient for explaining situations in which changes in aggregate expenditures (and hence in aggregate demand) cause the price level to change.

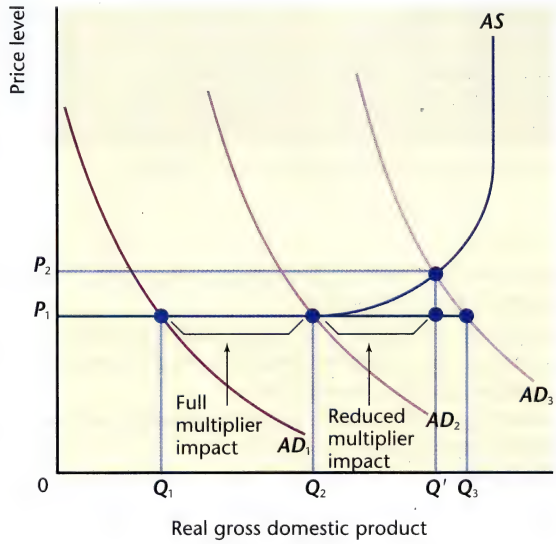


FIGURE 8.10
Increases in the price level and the multiplier

The aggregate demand – aggregate supply model allows us to illustrate how inflation reduces the size of the multiplier. For the increase in aggregate demand from AD_1 to AD_2 the price level is constant, and a 'full-strength' multiplier applies. Although the increase in aggregate demand from AD_2 to AD_3 is of the same absolute size, it is partly dissipated in inflation (the rise in the price level from P_1 to P_2). Therefore real domestic output increases only from Q_2 to Q'.

Concept Highlights

- Assuming a constant price level, the aggregate demand – aggregate supply model would show the same multiplied change in real GDP as portrayed in the aggregate expenditures – output model.
- Where a shift in aggregate demand results in price-level increases, some or all of the impact of the multiplier is lost due to the impact of inflation. This reflects the interest-rate effect, real-balances effect and foreign-purchases effect.

Global SNAPSHOT

ECONOMIC GROWTH AND THE GENERAL LEVEL OF PRICES

High rates of growth in GDP may put pressure on the supply side of the economy, causing an upward movement in the general level of prices. Here we examine the relationship between the annual average rates of growth of GDP and the GDP deflator over the 1990–97 period for a number of countries.

Country	Annual average growth rate (%)	
	Gross domestic product	GDP deflator
Australia	3.7	1.2
Canada	2.1	1.4
China, mainland	11.9	11.6
China, Hong Kong SAR	5.3	6.7
France	1.3	1.9
India	5.9	9.4
Italy	1.1	4.5
Japan	1.4	0.6
Mexico	1.8	18.5
Norway	3.9	1.9
Russian Federation	−9.0	394.0
Switzerland	−0.1	2.3
United Kingdom	1.9	3.1
United States	2.5	2.4

SOURCE: World Bank, World Development Report 1998/99.

Questions

1. Graph the data plotting average annual growth in GDP against the annual average growth in the GDP deflator.
2. Examining your graph, is it true that those countries with the highest rates of growth are those with the greatest rate of increase in the price level? Point out the exceptions to this general rule.
3. In which countries does it appear that supply-side pressures are clearly the cause of inflation? Justify your choices.
4. Refer back to your analysis of the consumption–income and investment–income relationships in the Global Snapshots of Chapters 6 and 7. Do those countries that have a poor growth–inflation pattern in the above table have any features in common? Explain.

SUMMARY

1 The aggregate demand – aggregate supply model provides us with some basic analytical tools and a means of organising our thinking about the macroeconomic conditions our economy has encountered. With it, we are able to describe the fluctuations that we have observed in our aggregate measures of the level of real output and the price level, and suggest some of the possible causes.

2 The aggregate demand curve shows the level of real domestic output that will be purchased at each possible price level.

3 The rationale for the down-sloping aggregate demand curve is based upon the interest-rate effect, the real-balances effect and the foreign-purchases effect.

4 The interest-rate effect suggests that a higher price level will be associated with increases in the level of interest rates. This may reflect an up-sloping supply curve for money combined with an increase in the size of the transaction demand for money due to higher prices. Alternatively we may argue that investors and lenders will require compensation for the impact of price-level increases on the purchasing power of their funds. This is achieved by increases in the interest rate that they charge for these funds. Higher interest rates reduce those consumption and investment purchases that are interest-rate sensitive.

5 The real-balances effect indicates that inflation will reduce the real value or purchasing power of fixed-value financial assets held by households and cause them to cut back on their consumer spending.

6 The foreign-purchases effect suggests that an increase/decrease in Australia's price level relative to other countries will reduce/increase the net exports component of aggregate demand.

7 The down-sloping aggregate demand curve can be derived from the aggregate expenditures – output model by varying the price level and determining how the consequent shifts in aggregate expenditures alter the equilibrium level of real domestic output. Shifts in the aggregate demand curve are associated with shifts in the aggregate expenditures curve caused by changes in the non-price-level determinants of consumption, investment or net exports.

8 The determinants of aggregate demand are (a) spending by domestic consumers, reflecting consumer wealth, expectations, indebtedness and taxes; (b) investment expenditures by businesses, based on interest rates, on profit expectations on investment projects, on the level of business taxes, on technology and on the degree of excess capacity; (c) government spending; and (d) changes in net export spending, which reflect foreign GDP growth and the level of the exchange rate.

9 The aggregate supply curve shows the levels of real domestic output that will be produced at various possible price levels. In discussing aggregate supply we must distinguish between the short-run aggregate supply curve and the long-run aggregate supply curve. The short run is a period over which it is assumed that wages are largely fixed due to the presence of contracts and awards.

10 The shape of the short-run aggregate supply curve depends upon what happens to production costs—and therefore to the prices businesses must

receive to cover costs and make a profit—as real domestic output expands. At low levels of real domestic output, substantial and high unemployment mean that production can be increased with little increase in cost and, therefore, prices. As output increases towards the full-employment output level, costs increase more rapidly as production bottlenecks appear and less efficient equipment and workers are employed. Prices must therefore rise to a greater degree as real domestic output is expanded in this range. When the economy reaches its potential output level, consistent with its natural rate of unemployment, real domestic output is at a maximum and cannot be increased over the longer term. This is the location of the long-run supply curve.

11 The determinants of aggregate supply are input prices, productivity, and the legal and institutional environment. All else being equal, a change in one of these factors will change per-unit production costs at each level of output and therefore alter the location of the short-run aggregate supply curve. Where these factors affect the ability of the economy to produce, they will also cause shifts in the position of the long-run aggregate supply curve.

12 The intersection of the aggregate demand and short-run aggregate supply curves determines the equilibrium price level and real domestic output in the short run. However, in the long run the equilibrium level of real domestic output cannot exceed the economy's potential output.

13 The aggregate demand curve may shift as a result of changes in any of its determinants—consumer, investment and government spending and the level of net exports. Given short-run aggregate supply, rightward shifts of aggregate demand will increase real domestic output and employment, and the price level.

14 The impact that increases in aggregate demand have on real domestic output and the level of prices depends on the position at which the aggregate demand curve cuts the short-run aggregate supply curve. The distance of the economy from its potential output level influences the response of short-run aggregate supply to changes in aggregate demand. At low levels of output and employment, an increase in aggregate demand has a significant impact on output levels but relatively little impact on the level of prices. As the economy approaches its long-run potential output level, increases in aggregate demand are increasingly dissipated in increases in the price level and have a relatively lower impact on real output. The inflation that results purely from shifts in the aggregate demand curve is known as demand-pull inflation.

15 The ratchet effect reflects the fact that prices are flexible upwards, but relatively inflexible downwards. While an increase in aggregate demand will raise the price level, prices may not fall in the shorter term in response to a decrease in aggregate demand. This stickiness reflects a number of factors: (a) the high share of wage costs in total costs of firms and the tendency to hire more workers as output increases; (b) a desire not to reduce workforce morale and productivity through redundancies (it is difficult to make only the less productive in the workforce redundant); (c) monopoly power; and (d) menu costs.

16 The short-run aggregate supply curve may shift when any of its determinants alters. Given aggregate demand, a rightward shift of the short-run aggregate supply curve will increase domestic output and employment and reduce

prices, while a leftward shift will decrease equilibrium real output and employment and increase prices. Inflation associated purely with shifts in the aggregate supply curve is known as cost-push inflation.

17 Assuming a constant price level, the aggregate demand – aggregate supply model would show the same multiplied change in real GDP as portrayed in the aggregate expenditures – output model. Thus the multiplier would be the same as that for the simple aggregate expenditures model of the economy.

18 More realistically, where a shift in aggregate demand results in price-level increases, some or all of the impact of the multiplier will be lost. This is due to the impact of inflation and reflects the interest-rate effect, real-balances effect and foreign-purchases effect.

KEY TERMS *and* CONCEPTS *to remember*



aggregate demand curve	262	foreign-purchases effect	264
aggregate supply curve	271	interest-rate effect	263
cost-push inflation	285	long-run aggregate supply curve	274
demand-pull inflation	282	productivity	278
determinants of aggregate demand	266	ratchet effect	283
determinants of aggregate supply	275	real-balances effect	264
equilibrium real domestic output and price level	280	short-run aggregate supply curve	272
		stagflation	285

QUESTIONS *and* STUDY SUGGESTIONS



Discussion & review

1 Explain in detail why the aggregate demand curve is down-sloping. Specify how your explanation differs from the rationale behind the down-sloping demand curve for a single product.

2 What are the determinants of aggregate demand? What is the impact of changes in each on the position of the aggregate demand curve?

3 Distinguish between short-run and long-run aggregate supply. What is the short run? What assumption is critical to the development of the short-run aggregate supply curve as distinct from the long-run aggregate supply curve? Explain.

4 What determines the position of the long-run aggregate supply curve? Can we exceed the economy's potential output level in the short run? Explain.

5 Explain the shape of the short-run aggregate supply curve, accounting for the differences in its slope as we approach the economy's long-run potential output level.

6 What are the determinants of aggregate supply? Describe how changes in each affect each of the short-run and the long-run aggregate supply curves.

7 What is the ratchet effect? On what ideas is it based, if we assume that wage rates are essentially fixed in the short run? Explain.

8 What is demand-pull inflation? What is cost-push inflation? Explain the sources of each and distinguish clearly between the two.

9 Explain the following two statements:

(a) 'The aggregate expenditures model is an unemployment model; the aggregate demand – aggregate supply model is an inflation model.'

(b) 'The aggregate expenditures model can explain demand-pull inflation, but the aggregate demand – aggregate supply model is needed to explain cost-push inflation.'

10 What is the impact of price-level changes on the multiplier? Explain.



1 Using appropriate diagrams, reconcile the aggregate expenditures – income model and the aggregate demand curve of the aggregate demand – aggregate supply model.

2 What effects might each of the following have on aggregate demand or short-run and long-run aggregate supply curves?

(a) a widespread fear of depression among consumers

(b) the sale of wheat to the Russian Federation

(c) a tax leading to a 5c per litre increase in petrol prices

(d) a decrease in interest rates

(e) a cut in Commonwealth spending for higher education

(f) an increase in interest rates

(g) the discovery of cheaper energy sources

(h) tax reductions

3 Assume that the economy is in equilibrium at a level of output below that associated with full employment. Show, graphically, methods by which the economy might be moved towards full employment. Which variables would have to be affected in each case to bring about the relevant changes in aggregate supply or aggregate demand? Which of these variables is it most likely that government could influence strongly? Explain.

4 Explain how an increase in demand that increases real domestic output towards the full-employment level may generate instability in the price level. What is this effect referred to as?

5 Explain how the price level might be ratcheted upwards when aggregate demand increases. Use diagrams to show the implications for output and employment.

6 Draw an aggregate demand – aggregate supply diagram where equilibrium occurs below the full-employment level of output. Now show the impact of a leftward shift in the aggregate supply curve. What developments might cause such a shift?

7 Using diagrams, explain how an up-sloping aggregate supply curve might weaken the multiplier effect.

8 Use an aggregate demand – aggregate supply diagram to distinguish between demand-pull and cost-push inflation.

Application & analysis

1 'Unemployment can be caused by a leftward shift of aggregate demand or a leftward shift of aggregate supply. The first problem may be easier to resolve.' Do you agree? Explain your reasoning.

2 During the 1980s the Labor government reached an agreement with the union movement that reduced the rate of increase in money wages and allowed real wages to fall. This was known as the Accord. In terms of the determinants of supply, which determinants would have been most strongly affected by this agreement? Use the aggregate demand – aggregate supply model to show how the impact of the Accord would have influenced the path of prices and real output over the decade.

3 Consider the data in the table below. Graph the data in price level – real GDP space. Draw aggregate demand and aggregate supply curves through each data point. Based on this, discuss whether demand-pull or cost-push inflation appears to have had the dominant influence in increasing the general level of prices over each of the five-year periods in the sample data.

	GDP chain price index (1997–98 = 100)	Real GDP 1997–98 prices $ million
1985–86	66.4	377 316
1986–87	71.4	387 725
1987–88	77.9	408 450
1988–89	83.7	425 658
1989–90	87.8	440 916
1990–91	89.8	440 125
1991–92	91.8	441 312
1992–93	93.1	457 520
1993–94	93.8	476 384
1994–95	95.8	498 233
1995–96	98.4	520 637
1996–97	99.2	540 404
1997–98	100.3	565 947
1998–99	100.6	591 012

SOURCE: Reserve Bank of Australia, Bulletin, *various issues.*

4 Based on your knowledge of recent Australian economic history, briefly outline the factors that have dominated the shifts implied in the aggregate demand – aggregate supply schedules in the previous question.

NOTES

1 This section assumes a knowledge of the aggregate expenditures model of Chapters 6 and 7. Some instructors may wish to skip this section if these chapters are not set as part of the subject.

2 This section assumes a knowledge of the aggregate expenditures model (Chapters 6 and 7). Instructors who wish to rely only on the aggregate demand – aggregate supply model may skip this section.

3 Instructors who did not set Chapters 6 and 7 may find it useful to discuss the concepts of the MPC, MPS and multiplier here.

A LAST WORD

THE PUBLIC VERSUS THE PRIVATE SECTOR IN JAPAN'S RECOVERY

Although both the public and private sectors make spending decisions that affect aggregate demand, they may have opposing effects. The conflicting pressures that the private and public sector have placed on aggregate demand in Japan over recent years provide an example of the ability of the private sector to largely nullify the public sector's impact—via fiscal policy—on economic activity.

Is Japan heading back into recession? The news out of the country's Ministry of Finance is that Japan's national output probably fell in the last quarter of 1999, after shrinking by 1 per cent in the third quarter. Technically that's a recession. Will this new downturn continue and what does it mean for the Nikkei and the yen? You can answer these questions if you understand the plate-shift movements taking place under the surface of Japan's seemingly stagnant economy.

Throughout the 1990s, the Japanese economy was like a jellyfish. It rose and fell with the deep-sea swell of the world economy, but ultimately went nowhere. But now things are beginning to change. For Japan's government and private sector are like two of the country's famous bullet trains on the same track, but heading full tilt in opposite directions.

The government keeps pumping in huge fiscal injections to revive the economy. But if fiscal packages could save Japan, the job would have been done long ago. Every unsustainable increase in government spending produces an offsetting jump in household savings. That's because Mr and Mrs Suzuki are much more intelligent than their rulers. As Japan's public sector debt hits 150 per cent of GDP and government pension liabilities remain seriously underfunded—making Japan's government twice as bust as Italy's ever was—the population knows it will have to finance its own old age and pay through the nose in higher taxes.

In contrast, Japan's corporate sector is on the move. In the past, whenever profits started to rise, the first thing Japanese corporations did was recruit more people. That was their social duty. Now that's ending. The historic tie between profit performance and employment growth in Japan has broken down as globalisation forces Japanese companies to operate for profit maximisation.

The traditional interpretation is that corporate restructuring will eventually raise the rate of return on Japanese industry's assets. But, in the short term, say the economists, it will unleash a deflationary tidal wave, as jobs grow scarce, earnings remain low and household savings stay high. And that's why Japan is slipping back into recession. Eventually, this crisis will force the Bank of Japan to loosen monetary policy by printing money rather than just keeping interest rates near zero. Then the yen will weaken sharply.

But I reckon the traditional view is wrong in one important way—restructuring need not be bad for growth. The Japanese stock of IT investment (and output of IT services) stands at less than 40 per cent of the US's. But Japan's supply-side revolution will boost corporate profitability dramatically over the next few years. And it will create a dynamic service sector in Japan based on efficiency rather than ritual. Japan's IT paradigm could look like that of the US within five to seven years. The capital investment that this would need in equipment and software could add 0.3–0.6 per cent to annual GDP growth.

And that's before counting the derivative effects that the availability of better services would have on demand. Here, the dynamic gains of supply-side reform will more than outweigh the depressing impact of job losses. That's because reducing a corporate workforce makes the majority of workers much more productive and even a little better paid. That implicit reduction in unit labour costs and the increase in real wages can raise the purchasing power of both consumers and companies.

Reducing government's economic role has a similar effect. It is amply proven by the example of EMU's impact upon Europe's erstwhile most profligate governments, like Italy. These were forced to limit (not eliminate) wastage of taxpayer's money. And lo and behold, instead of shrinking aggregate demand, this resulted in the same buck being spent more efficiently by the private, instead of the public, sector. Economic growth picked up.

So I'm convinced that, even if Japan did slip into a technical recession at the end of 1999, it won't continue in 2000. And even if real GDP growth did stay flat like the surface of a lake, it is becoming

increasingly irrelevant in determining the fate of equity investment in Japan. That depends on all the agony of corporate birth and death unfolding underneath ...

... What about the yen? That's a harder call. If I'm right about Japan Inc starting to operate for the benefit of shareholders, an awful lot of money will pour into Japan to go overweight Japanese equities. That should be good for the yen too.

But I still think the yen will be weaker by the end of this year. The first and most obvious reason is that, prior to kicking the bucket at the elections this year, the ruling Liberal Democrats under PM Obuchi will spend every yen they can to try and avoid their own funeral. As I argued in this column last November, the government's launch of yet another fiscal package worth Y6 trillion, or 1.3 per cent of GDP, in real spending at the end of last year will not generate any sustained economic recovery. So, if Japan's economy still looks weak by the summer another package prior to elections is in the cards.

That would cause the issuance of government paper to soar, exacerbating fears of public sector insolvency. Already, Moody's has signalled a warning that it might downgrade the credit rating for Japan's sovereign debt. None of that is good news for the currency. No wonder it has weakened to Y111/$ now. After all, who would want to own the bonds of a bankrupt state yielding less than 2 per cent when the US offers a shrinking stock of the world's safest government bonds yielding over 6 per cent?

But most important for the yen in the longer term is that Japan's corporate sector will act differently than in the past. More services and fewer things will be produced at home. So the outflow of capital to finance foreign production of tradable goods for the Japanese market will expand and so weaken the yen.

A rapidly declining trade account surplus will result from a bigger slice of domestic demand being supplied by Japan Inc abroad. And rising profits from foreign investments will not necessarily flow back to buoy the current account. More likely foreign profits will be reinvested overseas. America's are, so why not Japan's?

So the prospects for Japan in 2000 are an eventual pick-up in growth and the end of deflation ... And behind the economic cycle is Japan's supply-side revolution, driven by globalisation and the e-commerce revolution. That will sound the death-knell of Japan's political elite, starting with the election this year.

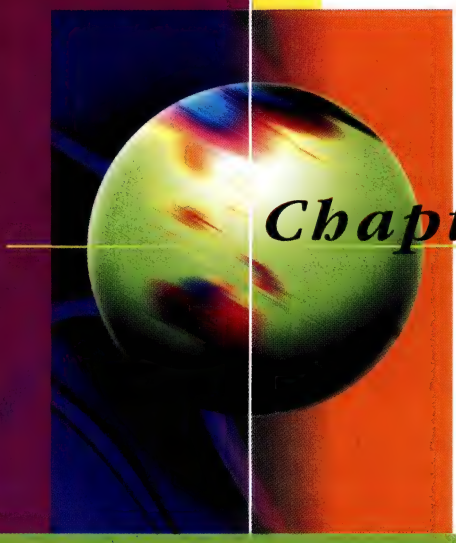
SOURCE: David Roche, Euromoney, *March 2000.*

Questions

1 What are the implications of the opposite directions being taken on expenditure by the public and private sectors in Japan for aggregate demand in that country? Explain.

2 Why is the private sector largely offsetting the efforts of the government sector to re-inflate the Japanese economy? As you develop your answer, explain which components and determinants of aggregate demand are being most affected by the decisions of the private sector.

3 What will be the likely effects on aggregate supply of the reforms and restructuring that Roche suggests are underway in the article? What do these reforms and other changes suggest for the ability of the Japanese economy to enjoy low-inflation growth in the medium to longer term?



Chapter 9 FISCAL POLICY AND THE PUBLIC DEBT

INTRODUCTION

The first major task of this chapter is to extend our analysis of the public sector and its impact on the equilibrium level of GDP developed in Chapters 7 and 8. It is important to remember at this point that households and businesses base their consumption and investment decisions on private self-interest. Also, that the sum of these decisions may result in either a recession or inflation.

In contrast to the private self-interest of the private sector, government is an instrument of society as a whole; hence, within limits, government's decisions concerning spending and taxing can be altered to influence the equilibrium level of GDP for the general welfare. In particular, a fundamental function of the public sector is to stabilise the economy. This stabilisation is achieved in part through **fiscal policy**; that is, through the manipulation of the public budget—government spending and tax collections—for the express purpose of increasing output and employment or reducing the rate of inflation. Indeed, one of the basic notions of our mainstream economic perspective is that government has an obligation to behave in this way.

LEARNING OBJECTIVES

- **Briefly outline the nature of federal government expenditures and revenues.**
- **Explain how a degree of economic stability is built into our tax system.**
- **Survey some basic problems in the application of fiscal policy.**
- **Discuss briefly several contrasting budget philosophies.**
- **Assess the quantitative and qualitative aspects of the public debt.**
- **Discuss the implications of and complications associated with fiscal policy within the aggregate demand – aggregate supply framework.**

FEDERAL GOVERNMENT FINANCE

In this section we will briefly comment on the structure and nature of the federal government's expenditures and revenues. This will provide you with insights into the nature of these revenues and expenditures—that is, whether they are income-sensitive or discretionary in character.

FEDERAL EXPENDITURES

Table 9.1 (over the page) reveals a wide variety of federal expenditures, including purchases and transfers. The purchase items are largely expenditures on final consumption of goods and services, but include expenditure on new fixed assets. Note the large expenditure on social security and welfare, which includes transfers.

Some important areas of spending—social security and welfare and national defence—are direct expenditures by the federal government. Other major items like health and education include **specific purpose grants**, which are outlays on behalf of, or for, state government authorities for defined activities. A further major outlay item is the direct payments to state and local governments that are not allocated to function; much of this money can be spent on activities at the discretion of those levels of government. About one-eighth of federal outlays are transfers of this kind, mostly to the states.

Note that over 5 per cent of outlays are interest on the public debt—the public debt being the accumulation of past federal government deficits minus surpluses. The remaining categories of spending listed in Table 9.1 are largely self-explanatory.

FEDERAL REVENUES

The receipts side of Table 9.1 makes it clear that individual income tax, company income tax and indirect taxes—in the form of sales and excise taxes—are the major sources of federal revenue.

PERSONAL INCOME TAX

Personal income tax traditionally has been the centrepiece of our national tax system. This tax is levied on taxable income—that is, on the incomes of households and unincorporated enterprises, after certain exemptions and deductions have been taken into account. Certain rebates on tax payable have also been made available in the past. Income tax on individuals in Australia takes the form of a progressive system, with **average** (total tax paid divided by taxable income) and **marginal** (the tax rate paid on additional or incremental income) **rates of tax** increasing with the level of income; that is, as income goes up, different (and increasing) rates of tax apply to successive layers or brackets of income. You will explore the current tax scales in the questions that accompany this chapter.

Marginal rates and net income received

As income rises, the marginal tax rate rises. Indeed, the fact that marginal tax rates are higher than average pulls up the average rate. However, because the marginal rate applies only to each additional dollar of income earned, you can never be made worse off by earning an extra dollar; at least some part of it ($1 less the marginal tax rate) will be yours to keep.

Table 9.1 The federal budget (1998–99)

Revenues	$ million	Per cent of total
Individual PAYE income tax	71 156	48.6
Other individual income tax	13 103	8.9
Gross prescribed payments for individuals	2 794	1.9
Net individual income tax	*76 729*	*52.4*
Company income tax	20 733	14.2
Superannuation income tax	3 916	2.7
Withholding tax	1 220	0.8
Petroleum rent and royalties tax	420	0.3
Total income tax	*103 016*	*70.3*
Indirect taxes	32 416	22.1
Other taxes, fees and fines	5 672	3.9
Total tax revenues	**141 105**	**96.4**
Total non-tax revenue	5 340	3.6
Total revenue	**146 444**	**100.0**
Outlays by function		
Defence	11 203	8.0
Education	9 737	6.9
Health	23 344	16.6
Social security and welfare	52 768	37.5
Housing and community services	1 196	0.8
Recreation and culture	1 361	1.0
Economic services	7 667	5.4
General public services	8 153	5.8
Public debt interest	7 508	5.3
Other expenses	17 881	12.7
Total expenses	**140 814**	**100.0**
Operating result	5 630	
Underlying cash balance	5 629	
Net advances	−7 074	
Headline surplus (+)/deficit (−)	**12 704**	

- *Major items in the outlays section include specific grants to the states. Expenditures include final consumption expenditure and expenditure on new fixed assets.*
- *Due to rounding of figures, some column totals may appear to be incorrect.*

SOURCE: Reserve Bank of Australia, Bulletin, *January 2000.*

Income taxes and the GST

Since 1 July 2000, the rates of tax applied to personal incomes, and the reliance of the federal budget on income taxes, have decreased. This reflects the introduction of the **goods and services tax** (GST) in Australia. As it suggests, the GST taxes both *goods*, traditionally a heavily taxed area, and *services*, traditionally a low-taxed area. This has had the effect of broadening the tax base and capturing consumption expenditures to a greater extent. The emphasis of the tax system has thus moved towards consumption and away from income, to some degree.

COMPANY INCOME TAX

The company income tax has a relatively simple structure. Company profits in 1999–2000 were taxed at a single rate of 36 per cent (reduced from 39 per cent in 1995–96 and 49 per cent in 1988–89). This rate will be further reduced to 34 per cent in 2000–01 and to 30 per cent in 2001–02. Taxable profits are calculated by subtracting various depreciation and investment allowances from the company's net profit.

Double taxation

The company income tax historically entailed a highly controversial problem—**double taxation**. Dividends were taxed twice, while other forms of income were taxed once. All company net income was first taxed under the company income tax. In addition, that portion of company earnings that flowed to shareholders was taxed for a second time as personal income. This double taxation of dividends was felt by many economists to be a glaring inequity in the structure of taxes. However, as part of a process of reform of the tax system, double taxation was effectively removed as from July 1987. Instead, an **imputation system** was introduced giving credit to those taxpayers who receive dividends for the taxes already paid on profit by the company.

INDIRECT AND OTHER TAXES

In Australia, prior to the introduction of the GST, sales taxes fell on a wide range of products, whereas excise taxes fell on a small, select group of products. Indirect taxes of this nature are often thought to be regressive. This reflects the fact that income does not influence the amount of indirect tax paid—except with regard to the total spending incurred. Thus those on lower incomes may tend to pay a relatively greater share of income in the form of indirect taxes.

Sales taxes

Sales tax: a levy on the wholesale price of a broad range of products.

A **sales tax** is a levy on wholesale price. Under the taxation system applied in Australia until 30 June 2000, the sales tax rate varied from 0 per cent (on exempt commodities like food, building materials and medicines) to 12, 22, 26, 32 and as much as 45 per cent. The most general rate was 22 per cent. Passenger vehicles were taxed at 22 per cent on wholesale price; however luxury cars were taxed at a rate of 45 per cent. Other luxury items including videos and televisions incurred a 22 per cent rate under provisional arrangements. Wholesale tax rates were increased by almost 5 per cent in the 1996–97 budget.

Excise duties

Excise duty: a specific levy per physical unit usually placed on alcohol, tobacco and petroleum products.

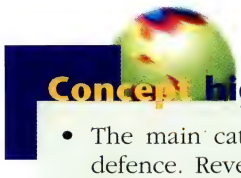
Excise duties are currently placed on beer and spirits, tobacco products, and petroleum products. An excise tax is levied per physical unit of production (for example, per kilo, per tonne, or per litre) rather than on wholesale value.

The impact of the GST

Under the GST, introduced from 1 July 2000, sales taxes have been replaced by a GST at a rate of 10 per cent. (There are certain provisions related to passenger motor vehicles that will affect their progress to this rate.) Specific excise taxes, however, continue to remain on the products mentioned above.

The appropriate balance between revenues raised by income versus sales taxes is a matter of continuing debate, and is expected to be a key issue at elections during the early part of the 2000s. This reflects the uniform application

of the GST across most goods and services, the limited range of exemptions (such as certain foodstuffs) to the GST, and the inherently regressive nature of this form of taxation.



Concept highlights

- The main categories of federal expenditures relate to social security and welfare, health and defence. Revenues come primarily from personal income tax, indirect taxes—in the form of the goods and services tax (GST) and excise taxes—and company income taxes.
- The introduction of the GST has had a large impact on the relative share of tax revenue derived from different sources. Income tax rates have generally been reduced, while the sales tax net has been widened to include services. This has led to a greater emphasis on indirect taxes as a form of revenue raising.
- Federal taxes on personal income are progressive, reflecting increasing average and marginal tax rates as income rises. The company income tax is probably progressive. General sales and excise taxes, and taxes imposed at the state level (such as payroll and property taxes) tend to be regressive, due to their application to specific goods regardless of income level. This has continued to be the case with the GST.

Business IMPLICATION — SMALL GOVERNMENT IS BEAUTIFUL?



Many in business call for small government to reduce the burden of the state on their ability to efficiently conduct business, and to reduce the burden of taxes on businesses and households. But does 'smaller government', however defined, necessarily mean that business costs will fall? The area of standards, particularly those applied to the foods that we eat, would suggest that this need not be the case.

Quality inspection in the food industry is central to our peace of mind regarding the safety of the foods we consume. Self-regulation and quality inspection in many parts of the food industry have seen a task formerly taken on by government—the monitoring of food standards—passed to the industries that produce the foods. The implications? These businesses now have to hire staff or consultants to conduct the requisite inspections, frequently at a higher charge than that formerly applied by the government. Thus these businesses have been required to internalise the costs of quality and health inspection. Small government need not mean lower business costs when you lose a subsidy provided by the government.

DISCRETIONARY FISCAL POLICY

Our review here will be brief, because the role of government taxes and spending has already been discussed when developing the aggregate demand – aggregate supply model in Chapter 8. Fiscal policy is often taken to refer to attempts by the government to alter the equilibrium level of real GDP, employment and inflation. This view of fiscal policy reflects **discretionary fiscal policy**—*deliberate* changes in government spending and tax revenues that are designed to eliminate either inflationary pressures or the impact of recession on real GDP. As we will discuss shortly, however, not all fiscal policy is deliberate; our tax and expenditure systems embed a certain amount of automatic stability into our economy.

Discretionary fiscal policy: the deliberate manipulation of taxes and spending by government for the purpose of altering real GDP and employment, controlling inflation and stimulating economic growth.

Figures 8.3 and 8.8 in Chapter 8 make the potential stabilising role of government quite evident; government spending, as one of the major shift factors of aggregate demand, directly affects output, employment and the price level. Tax policy, on the other hand, works indirectly through the other two major components of aggregate demand—taxation is a determinant of both consumption and investment. In particular, reductions in the personal income tax tend to increase consumption expenditures; tax increases tend to reduce consumption expenditures. Cuts in the company income tax or other business taxes tend to improve profit expectations and stimulate investment; tax increases weaken profit expectations and reduce the willingness to invest.

As we analyse fiscal policy we should keep in mind that government expenditure and taxation policy is used not only for macroeconomic stability, but also for the reallocation of resources and redistribution of income. Thus factors other than the desire to reduce economic instability may determine fiscal policy.

FISCAL POLICY OVER THE CYCLE

Expansionary fiscal policy: the use of increased government spending and/or lower taxes, thereby increasing the government budget deficit, to stimulate economic activity and move the economy out of recession or depression.

Our discussion clearly suggests how fiscal policy might be used to help stabilise the economy. When in a recession, an **expansionary fiscal policy** is in order. This entails:

1 increased government spending, or

2 lower taxes, or

3 a combination of the two.

In other words, if the budget is balanced at the outset, fiscal policy should move in the direction of a government budget deficit during a recession or depression.

Contractionary fiscal policy: the use of reductions in government spending and/or higher taxes, thereby reducing the deficit or increasing the surplus in the government's budget, to control demand-pull inflation.

Conversely, when demand-pull inflation is prevalent, a restrictive or **contractionary fiscal policy** is appropriate. A contractionary policy involves:

1 decreased government spending, or

2 higher taxes, or

3 a combination of the two.

Fiscal policy should move towards a surplus in the government's budget when the economy is faced with the problem of controlling inflation.

FINANCING DEFICITS AND DISPOSING OF SURPLUSES

Given the size of a deficit, its expansionary effect on the economy will depend upon the method by which it is financed. Similarly, given the size of a surplus, its deflationary impact will depend on how it is disposed. There are two main methods by which government can fund deficits: borrowing, and the creation of money. Similarly, there are two main avenues through which to handle surpluses: debt reduction, and impounding. We will look at each of these courses of action in turn.

FINANCING DEFICITS: BORROWING VERSUS NEW MONEY

As stated in the introduction, the federal government can finance a deficit by borrowing from (selling interest-bearing bonds to) the public, or by issuing new money to its creditors. The latter statement implies that government would merely print up new dollar bills to finance its expenditures. Although it could do this, the Treasury would accomplish the same result more subtly by borrowing (obtaining loans) from the Reserve Bank. The Treasury would then draw upon these loans to finance its expenditures. When recipients deposit these funds in their own accounts at banks, the supply of money would increase. (The details of this process will be explained in Chapter 11.) The impact upon aggregate expenditures is somewhat different in each case.

BORROWING

If the government goes into the market for investment and other longer-term funds and borrows, it will obviously be competing with private business borrowers for funds. This added demand for funds may drive the equilibrium interest rate upward. We know from Chapters 6 and 8 that investment spending is inversely related to the interest rate. Hence, government borrowing will tend to crowd out some private investment spending and interest-sensitive consumer spending.

MONEY CREATION

If deficit spending is financed by the Reserve Bank issuing new money and accommodating the inflow into the system of new funds due to the government's expenditure program, the crowding-out of private expenditure can largely be avoided. Government spending can increase without any adverse effect on investment or consumption as long as the Reserve Bank maintains the level of the cash rate—its indicator of monetary policy stance (see Chapter 12). Our conclusion is that an accommodating stance by the Reserve Bank and its creation of additional funds is a more expansionary way of financing deficit spending than is borrowing.

DISPOSING OF A SURPLUS: DEBT RETIREMENT VERSUS AN IDLE SURPLUS

Demand-pull inflation calls for fiscal action by government that will result in a budget surplus. However, the anti-inflationary effect of this surplus depends on what government does with it.

DEBT REDUCTION

Since the Commonwealth government has an outstanding debt equivalent to about 15 per cent of the value of GDP, it is logical that government should use a surplus to retire outstanding debt. The anti-inflationary impact of a surplus, however, may be reduced somewhat by this. In retiring debt held by the general public, the government transfers its surplus tax revenues back to households. Potentially, this stimulates consumption expenditures, and reduces interest rates in the markets for investment and longer-term funds, thus increasing investment expenditures.

IMPOUNDING

On the other hand, government can realise a greater anti-inflationary impact from its budgetary surplus simply by impounding the surplus funds—that is, by allowing them to stand idle. An impounded surplus means that the government is extracting and withholding purchasing power from the income–expenditure stream. If surplus tax revenues are not reinjected into the economy, there is no possibility of the surplus being spent; that is, there is no chance that the funds will create inflationary pressure to offset the deflationary impact of the surplus itself. We conclude that the impounding of a budgetary surplus is more contractionary than the use of the surplus to retire public debt.

POLICY OPTIONS: *G* OR *T*?

Is it preferable to use government spending or taxes in eliminating recessionary and inflationary gaps? The answer depends to a considerable extent upon our view as to whether the public sector is too large or too small. Hence, 'liberal' economists, who think that the public sector needs to be enlarged to meet various failures of the market system, recommend that aggregate spending should be expanded during recessions by increasing government purchases and that aggregate expenditures should be constrained during inflationary periods by increasing taxes.

Conversely, 'conservative' economists, who contend that the public sector is overly large and inefficient, advocate that aggregate expenditures be increased during recessions by cutting taxes and that aggregate spending be reduced during inflation by cutting government spending. It is significant that an active fiscal policy designed to stabilise the economy can be associated with either an expanding or a contracting public sector.



Concept highlights

- Increases in government spending expand, and decreases contract, the equilibrium level of GDP. Conversely, increases in taxes reduce, and decreases expand, the equilibrium GDP.
- Appropriate fiscal policy to correct for unemployment entails increases in government spending and decreases in taxes—that is, a budget deficit.
- Decreases in government spending and increases in taxes—that is, a budget surplus—are appropriate fiscal policy for correcting demand-pull inflation.
- The impact of discretionary fiscal policy reflects the way that the issue or retirement of government debt is managed. When government finances a deficit by borrowing in the investment and longer-term markets for funds, the rate of interest in these markets will increase, reducing investment expenditures. If the deficit is financed by the creation of additional money by the Reserve Bank, and is accommodated by its monetary policy stance, there will potentially be little impact on the level of investment.
- Surpluses may be used to retire debt, which will tend to reduce the cost of investment funds and increase investment. Alternatively, surplus funds may be kept idle, which will leave interest rates unaffected.

NON-DISCRETIONARY FISCAL POLICY: BUILT-IN STABILISERS

Non-discretionary fiscal policy: built-in stabilisers that tend to increase the government's deficit, or reduce its surplus, during a recession and to increase its surplus, or reduce its deficit, during inflationary periods without requiring explicit action by policy makers.

To some degree appropriate fiscal policy occurs automatically. This so-called automatic or built-in stability is not embodied in our discussion of discretionary fiscal policy because we have initially ignored a reality. Our net tax system—net taxes equal taxes minus transfers and subsidies, henceforth taxes—is such that net tax revenues vary directly with GDP. Virtually all taxes yield more tax revenue as GDP rises. In particular, personal income taxes have progressive rates and result in more than proportionate increases in tax collections as GDP expands.

Further, as GDP increases and more goods and services are purchased, revenues from sales and excise taxes increase. And, similarly, payroll tax payments increase as economic expansion creates more jobs. Obviously, when GDP declines, tax receipts from all these sources decline. Transfer payments (or 'negative taxes') behave in precisely the opposite way. Unemployment compensation payments, social security and subsidies to farmers all decrease during economic expansion and increase during a contraction. Thus we find that our economic system has a set of stabilisers built into it, suggesting that a large component of fiscal policy may represent **non-discretionary fiscal policy**.

AUTOMATIC OR BUILT-IN STABILISERS

Figure 9.1 is helpful in understanding how the tax system creates built-in stability. Government expenditures, G, are given, and assumed to be independent of the level of GDP; expenditures are decided upon at some fixed level by the government. But government does not determine the level of tax revenues; rather, it establishes tax rates. Tax revenues then vary directly with the level of GDP that the economy actually realises. The direct relationship between tax revenues and GDP is shown in the up-sloping T line.

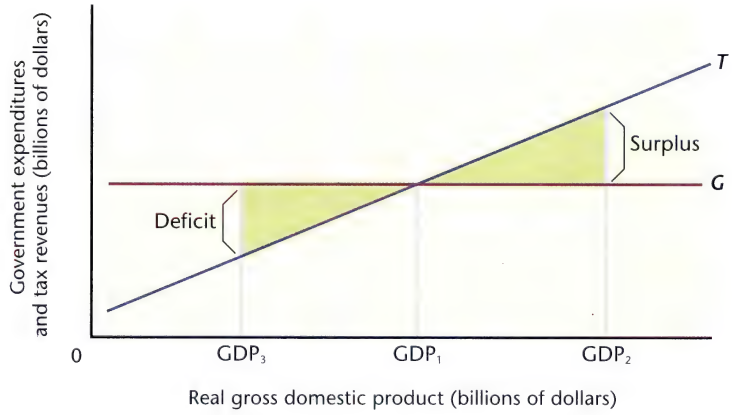


FIGURE 9.1
Built-in stability

If tax revenues vary directly with GDP, then the deficits that tend to occur automatically during recession will help alleviate that recession. Conversely, the surpluses that tend to occur automatically during expansion will help offset possible inflation.

The economic importance of this direct relationship between tax receipts and GDP comes into focus when we remember two things. First, taxes are a leakage or withdrawal of potential purchasing power from the economy. Second, it is desirable from the standpoint of stability to increase leakages or withdrawals of purchasing power when the economy is moving towards inflation and to diminish these withdrawals when the economy is tending to slump. In other words,

the kind of tax system portrayed in Figure 9.1 builds some stability into the economy by automatically bringing about changes in tax revenues, and therefore in the public budget, that tend to counter both inflation and unemployment.

Generally speaking, a **built-in stabiliser** is anything that tends to increase the government's deficit (or reduce its surplus) during a recession and to increase its surplus (or reduce its deficit) during inflation without requiring explicit action by policy makers. And, as Figure 9.1 clearly suggests, this is precisely what our tax system tends to do. As GDP rises during prosperity, tax revenues automatically increase and, because they are a leakage, restrain the economic expansion. Stated differently, as the economy moves toward a higher GDP, tax revenues automatically rise and tend to move the budget from a deficit to a surplus. Conversely, as GDP falls during a recession, tax revenues automatically decline, and this reduction in leakages cushions the economic contraction; that is, with a falling GDP, tax receipts decline and tend to move the public budget from a surplus to a deficit.

In terms of Figure 9.1, the low level of income GDP_3 automatically gives rise to an expansionary budget deficit; the high and perhaps inflationary income level GDP_2 automatically generates a contractionary budget surplus. Incidentally, if government alters our tax system so as to make tax revenues even more sensitive to changes in GDP than presumed in Figure 9.1—and this could be done, for example, by putting greater relative dependence upon taxes with progressive rates or by increasing the progressiveness of the overall tax structure—then the tax line would be steeper and built-in stability would be more pronounced.

QUALIFICATIONS AND SUBTLETIES

There is no question that the built-in stability provided by our tax system has served the economy well. This can be seen through an examination of Figure 5.1 (see Chapter 5). Following the introduction of our current pattern of taxes and welfare payments in the period after World War II—for example, the increasing dependence on the PAYE system, and the large-scale availability of unemployment benefits—we can observe that the fluctuations in real GDP are, on average, lower that in the period before Word War II. However, three significant points must be appended to our discussion.

AMELIORATION, NOT CORRECTION

The built-in stabilisers are not capable of correcting an undesirable change in the equilibrium GDP, as can be seen from the behaviour of the economy in the 1980s and 1990s. All the stabilisers do is reduce the magnitude or severity of economic fluctuations. Hence, discretionary fiscal action—that is, changes in tax rates, tax structure and expenditures—is required to correct an inflation or a recession of any appreciable magnitude.

FISCAL DRAG

The presence of a tax system in which tax revenues vary directly with GDP is not an unmitigated good. Such a tax system may tend to produce a **fiscal drag** in the form of budgetary surpluses that make it difficult to achieve and sustain full employment.

Built-in stability is clearly desirable if the economy fluctuates around the full-employment level of GDP. But if the economy is initially in a recession, the same degree of built-in stability can make it more difficult to move to full employment. Consider Figure 9.1 again. If GDP_1 is the full-employment level of output and the economy is currently enjoying full employment, the built-in stability provided by

the T line is clearly desirable in that the tax system will dampen any tendency for the economy to deviate from full employment. But what if the actual level of output coincides with a lower level of GDP, such as GDP_3? In this case the expansionary impact of any increase in one of the shift factors of aggregate demand will be blunted by the presence of the built-in stabilisers. Some of the stimulating impact of an increase in spending will leak into expanding tax revenues. In short, just as built-in stability assists in maintaining full employment once it is achieved, this same built-in stability will also tend to maintain unemployment once it exists.

There is also a long-run aspect to the problem of fiscal drag. Suppose the full-employment output is at GDP_1, and the economy is actually operating at this level. The budget, you will note, is currently in balance. Now the catch is that ours is a growing economy and that, through time, the full-employment output will shift toward GDP_2. But this growth automatically generates a budget surplus that tends to precipitate a recession and choke off growth. In short, when a time dimension is added to Figure 9.1 to allow for growth, built-in stability may make it difficult to sustain full employment through time. During periods of substantial growth, significant budget surpluses automatically appear and have a contractionary impact. The remedy? The federal government must use discretionary fiscal policy to cut taxes, or increase expenditures to eliminate fiscal drag.

THE CYCLICALLY ADJUSTED BUDGET DEFICIT

Built-in stability—the fact that tax revenues vary directly with GDP—makes it hazardous to use the actual budget surplus or deficit in any given year as an index of the government's fiscal stance. To illustrate—suppose the economy is at full employment at GDP_1 in Figure 9.1 and, as we note, the budget is in balance. Now, assume that, during the year, consumption, investment or net export expenditures decline, causing a recession at GDP_3. The government, let us assume, takes no discretionary fiscal action; therefore, the G and T lines remain in the positions shown in the diagram. Obviously, as the economy moves to GDP_3, tax revenues fall and, with government expenditures unaltered, a deficit occurs. But this deficit is clearly not the result of positive counter-cyclical fiscal actions by the government; rather, it is the by-product of fiscal inaction as the economy slides into a recession.

The basic point is that we cannot say anything very meaningful about the government's fiscal posture, and whether it was appropriately manipulating taxes and expenditures, by looking at the historical record of budgetary deficits or surpluses. The actual budget surplus or deficit reflects not only possible discretionary decisions about spending and taxes (as shown in the locations of the G and T lines in Figure 9.1), but also the level of equilibrium GDP (where the economy is operating on the horizontal axis of Figure 9.1). Hence, given that tax revenues vary with GDP, the problem of comparing deficits or surpluses in year 1 and year 2 is that the level of GDP may be vastly different in each of the two years.

Cyclically adjusted budget deficit: indicates what the budget deficit (or surplus) would be if the economy were to operate at potential output throughout the year.

Economists have resolved this problem through the notion of a **cyclically adjusted budget deficit**. Simply stated, the cyclically adjusted budget deficit indicates what the budget deficit (or surplus) would be if the economy were to operate at potential output (see Chapter 5) throughout the year. Note that, although the actual budget in Australia has usually been in deficit, the cyclically adjusted budget deficit has undoubtedly more frequently been in surplus. For example, in 1990–91 and 1991–92 the presence of the actual budget deficits would imply that the government was engaged in expansionary fiscal policy. However, these years were associated with recession, falls in real GDP and high levels of unemployment. If the economy had been at its potential output level,

there would most likely have been a budgetary surplus for most of this period, as the intent of fiscal policy in 1990–91 and 1991–92 was in fact headed in a contractionary direction. Our difficulty in estimating the cyclically adjusted budget deficit is, of course, related to our definition of full employment or potential output, and the associated natural rate of unemployment (see Chapter 5).



Concept highlights

- Non-discretionary fiscal policy refers to the automatic adjustments that occur to the government's fiscal balance over the business cycle. Non-discretionary fiscal policy reflects the built-in stabilisers present in our mixed economic system.
- Built-in stabilisers exist due to the fact that net tax revenues vary directly with the level of GDP. Thus the presence of income-sensitive company tax, income tax and to a lesser extent, sales taxes, has a stabilising effect on output.
- During a recession, the public budget automatically tends towards a stabilising deficit; conversely, during expansion, the budget automatically tends towards an anti-inflationary surplus.
- Built-in stability ameliorates, but does not correct, undesired changes in GDP. Furthermore, the existence of built-in stability creates the problem of fiscal drag.

PROBLEMS AND CRITICISMS

Unfortunately, there is a great deal of difference between fiscal policy on paper and fiscal policy in practice. It is therefore imperative that we examine some specific problems that may be encountered in enacting and applying appropriate fiscal policy.

PROBLEMS OF TIMING

Several problems of timing may arise in connection with fiscal policy.

RECOGNITION LAG

It is extremely difficult to predict accurately the future course of economic activity. The recognition lag refers to the time that elapses between the beginning of a recession or an inflation and the recognition that it is in fact occurring. The economy may be several months into a recession or an inflation before this fact shows up in relevant statistics and is acknowledged.

ADMINISTRATIVE LAG

The wheels of democratic government are often slow in turning. There is inevitably a lag between the time when the need for fiscal action is recognised and the time when action is actually taken.

OPERATIONAL LAG

There is also a lag between the time when fiscal action is taken by government and the time when action has an impact on output, employment or the price level. Although changes in tax rates can be quickly put into effect, government spending on 'public works' means long planning periods and even longer periods of construction. Such spending is of questionable usefulness in offsetting short periods (for example, 6 months or 18 months) of recession. Because of these problems, discretionary fiscal policy has come to rely increasingly on tax changes.

POLITICAL PROBLEMS

Fiscal policy is created in the political arena, and this greatly complicates its use in stabilising the economy.

OTHER GOALS

Economic stability is not the sole objective of government policies on spending and taxing. Government is also concerned with the provision of public goods and services and the redistribution of income. Also note that the fiscal policies of state and local governments are frequently pro-cyclical. Thus, like households and private businesses, state and local governments tend to increase expenditures during prosperity and to cut them during recession.

EXPANSIONARY BIAS?

Rhetoric to the contrary, deficits tend to be politically attractive and surpluses politically painful; that is, there may well be a political bias in favour of deficits. In other words, fiscal policy may embody an expansionary–inflationary bias. Why?

Tax reductions tend to be politically popular. And so are increases in government spending, provided that the given politician's constituents share liberally in the benefits. But higher taxes upset voters, and reducing government expenditures can be politically precarious. For example, it might well be political suicide for a rural-based senator to vote for tax increases and against agricultural subsidies.

A POLITICAL BUSINESS CYCLE?

Although this represents a cynical viewpoint, we might suggest that the overriding goal of politicians is to get re-elected. A few economists have put forth the notion of a **political business cycle**; that is, they have argued that politicians might manipulate fiscal policy to maximise voter support, even though their fiscal decisions tend to destabilise the economy. According to this view, fiscal policy, as we have described it, may be corrupted for political purposes and cause economic fluctuations.

The suggested scenario goes something like this. The populace, it is assumed, takes economic conditions into account in voting. Politicians are penalised at the polls if economic conditions are depressed; they are rewarded if the economy is prosperous. Hence, as an election approaches, the current government makes tax cuts and increases government spending. Not only are these actions popular *per se*, but the resulting stimulus to the economy also pushes all the critical economic indicators in proper directions. Output and real incomes rise; unemployment falls, and the price level is relatively stable. As a result, government enjoys a friendlier environment in which to stand for re-election.

But after the election, continued expansion of the economy is reflected increasingly in a rising price level and less in growing real incomes. Increasing public concern over inflation prompts politicians to use a contractionary fiscal policy. Crudely put, recession is engineered by trimming government spending and increasing taxes to restrain inflation. Does this recession hurt government? Not really, because the next election is still two or three years away, and the critical consideration for most voters is the performance of the economy in the year or so prior to the election. Indeed, the recession provides a new starting point from which fiscal policy can again be used to generate another expansion in time for the next election campaign!

This possible perversion of fiscal policy is both highly disturbing and inherently difficult to document. Although empirical evidence is mixed and inconclusive, there is some evidence in support of this political theory of the business cycle.

CROWDING-OUT EFFECT

Let us now shift our attention from practical problems in the application of fiscal policy to a basic criticism of fiscal policy itself. The essence of the **crowding-out effect** is that an expansionary (deficit) fiscal policy tends to increase the interest rate and reduce investment spending, thereby weakening or cancelling the stimulus of the fiscal policy. In more detail, the scenario is as follows.

Assume the economy is in a recession and government invokes discretionary fiscal policy in the form of an increase in government spending. Government now goes into the investment-funds markets to finance the deficit through the sale of its bonds. The resulting increase in the demand for funds in these markets raises the interest rate—that is, the yield for funds of the maturity borrowed. Because investment spending varies inversely with the interest rate on these funds (see Chapters 6, 8 and 12), some investment is choked off or crowded out. (In addition, some interest-sensitive consumption spending—for example, automobile purchases—may also be crowded out.)

While few would question the logic involved, there is much disagreement about the size of the crowding-out effect. For example, some economists argue that there will be little crowding-out when there is considerable unemployment. The rationale for this contention is that, given a recession, the stimulus provided by an increase in government spending can be expected to improve business-profit expectations that are an important determinant of the level of investment. Thus investment expenditures need not fall—these may even increase—even though interest rates are higher as the investment-demand curve moves to the right to compensate.

Another relevant consideration concerns monetary policy. The monetary authorities may use monetary policy to offset the deficit-caused increase in the interest rates in the markets for funds. In this case the equilibrium interest rates would not change and the crowding-out effect would be zero.

Concept Highlights

- The problems and criticisms related to the use of fiscal policy include problems of timing, political problems, and the crowding-out effect.
- Problems of timing exist due to lags in recognition, administration and the operation of fiscal policy.
- Political problems exist in the form of the presence of alternative goals for government, the presence of an expansionary bias in the political system, and the potential for the existence of a political business cycle. (This cycle is based on government creating a prosperous economic environment in which to stand for re-election, then implementing a contractionary fiscal policy to control the resulting increase in inflation, and then supporting another expansion in time for the next election.)
- The crowding-out effect suggests that where the government competes for funds with private industry, its debt issue will increase the cost of investment funds and reduce the level of private investment.

BUDGET DEFICITS AND THE PUBLIC DEBT

Public debt: the total accumulation of the federal government's total deficits and surpluses that have occurred over time.

At the outset, it is important to have clearly in mind what we mean by deficits and the public debt. A *budget deficit* is simply the amount by which government's expenditures exceed its revenues during a particular year. The national or **public debt** is the total accumulation of the federal government's total deficits and surpluses that have occurred through time.

BUDGET PHILOSOPHIES

Is it desirable to increase deficits and thereby realise a growing public debt? Or should the budget be balanced annually? The essence of counter-cyclical fiscal policy is that the federal budget should move towards a deficit during recession and towards a surplus during inflation. This correctly suggests that the use of an activist fiscal policy is unlikely to result in a balanced budget in any particular year. Is this a matter for concern? Let us approach this question by examining the economic implications of several contrasting budget philosophies.

ANNUALLY BALANCED BUDGET

Until the depression of the 1930s, the **annually balanced budget** was generally accepted without question as a desirable goal of public finance. Upon examination, however, it becomes evident that an annually balanced budget largely rules out government fiscal activity as a counter-cyclical, stabilising force. Worse yet, an annually balanced budget actually intensifies the business cycle. To illustrate—suppose the economy encounters a siege of unemployment and falling incomes. As Figure 9.1 indicates, in such circumstances tax receipts will automatically decline. As we have said, in seeking to balance its budget, government must either:

1 increase tax rates, or

2 reduce government expenditures, or

3 employ a combination of these two.

The problem is that these policies are contractionary, and each one further dampens, rather than stimulates, the level of aggregate expenditures.

Similarly, an annually balanced budget intensifies inflation. Again, Figure 9.1 tells us that, as money incomes rise during the course of inflation, tax collections will automatically increase. To avoid the impending surplus, government must either:

1 cut tax rates, or

2 increase government expenditures, or

3 adopt a combination of both.

It is clear that all three of these policies will add to our inflationary pressures. The basic conclusion, then, is evident—an annually balanced budget is not economically neutral; the pursuit of such a policy is pro-cyclical, not counter-cyclical.

CYCLICALLY BALANCED BUDGET

The idea of a **cyclically balanced budget** sees government exerting a counter-cyclical influence and at the same time balancing its budget. In this case,

however, the budget would not be balanced annually—after all, there is nothing sacred about 12 months as an accounting period—but rather, over the course of the business cycle.

The rationale of this budget philosophy is simple, plausible and appealing. To offset depression, government lowers taxes and increases spending, thereby purposely incurring a deficit. During the ensuing inflationary upswing, taxes are raised and government spending is slashed. The resulting surplus can then be used to retire the debt incurred in financing the depression. In this way, government fiscal operations exert a positive counter-cyclical force, and the government can still balance its budget—not annually, but over a period of years.

The basic problem with this budget philosophy is that the upswings and downswings of the business cycle may not be of equal magnitude and duration (see Figure 5.1), and hence the goal of stabilisation comes into conflict with balancing the budget over the cycle. For example, a long and severe slump, followed by a modest and short period of prosperity, would result in a large deficit during the slump, little or no surplus during prosperity and therefore a cyclical deficit in the budget.

FUNCTIONAL FINANCE

According to **functional finance**, the question of a balanced budget—either annually or cyclically—is of secondary importance. The primary purpose of government finance is to balance the economy, not the budget. If the attainment of this objective entails either persistent surpluses or a large and growing public debt, so be it.

The problems involved in government deficits or surpluses may be relatively minor compared with the highly undesirable alternatives of prolonged recession or persistent inflation. The federal budget is first and foremost an instrument for achieving and maintaining macroeconomic stability. Government should not hesitate to incur any deficits and surpluses required for achieving this goal.

In response to those who express concern about the large debt that the pursuit of functional finance might entail, proponents of this budget philosophy offer three arguments. First, our tax system is such that tax revenues automatically increase as the economy expands. Hence, given government expenditures, a deficit that is successful in stimulating equilibrium GDP will be partially self-liquidating (see Figure 9.1). Second, given its taxing powers and the ability to create money, the government's capacity to finance deficits is virtually unlimited. Finally, it is contended that the problems of a large debt are substantially less burdensome than most people think. It is to the matter of the *public* or *national debt*—that is, the debt of all levels of the government—that we now turn.

THE PUBLIC DEBT

Because modern fiscal policy endorses unbalanced budgets for the purpose of stabilising the economy, its application will quite possibly lead to a growing public debt. Let us now briefly consider the public debt—its causes, its characteristics, its size and the burdens and benefits associated with it.

As noted, the public debt is the accumulation of all past deficits, minus surpluses, of the government. Growth of the public debt, as Table 9.2 indicates, has been substantial during most years since 1950. This was especially the case during 1980–87, when debt grew by about $37 billion. Debt also increased significantly during 1995–96, by around $10 billion. The years 1988–91 and the years of the late 1990s are exceptions to the general trend of increases in the national gross debt.

Most recently, in particular, the public debt has fallen substantially. This reflects the sale of public-sector assets by the Commonwealth government and the strength of the Australian economy during the recovery of the late 1990s.

CAUSES

Why has public debt generally increased historically? Or, stated differently, what has caused us to incur large and frequent deficits? From a long-term perspective the answer is twofold—wars and recession. A considerable portion of the public debt is attributable to war finance. The public debt grew rapidly during World War II. Some deficits have been the result of discretionary fiscal policy designed to offset recession or stimulate growth. At other times, deficits have been the consequence of built-in stability; for example, above-normal unemployment rates automatically reduced tax collections and tended to cause deficits. Further, over the past few decades various expenditures like social security, unemployment compensation and so on have expanded sharply in terms of numbers, coverage and level of benefits, and have been one of the causes of unbalanced budgets.

Table 9.2 Australian Commonwealth public debt (securities on issue and interest liability), selected years [a]

Year ended June	(1) C'wealth government securities on issue: redeemable in Australia ($ million)	(2) C'wealth government securities on issue: redeemable overseas ($ million)	(3) C'wealth government securities on issue: total ($ million)	(4) C'wealth government securities on issue as per cent of GDP	(5) Interest liability on C'wealth government debt ($ million)	(6) Interest liability on C'wealth government debt as per cent of GDP
1950	4 999	1 099	6 098	119.5	181	3.5
1955	6 628	1 216	7 844	81.6	252	2.6
1960	7 246	1 389	8 635	62.8	329	2.4
1965	8 695	1 529	10 225	51.7	442	2.2
1970	11 625	1 580	13 205	43.2	634	2.1
1975	16 588	1 182	17 770	27.5	1 059	1.6
1980	25 576	5 396	30 972	25.2	2 232	1.9
1985	45 518	9 762	55 310	25.6	5 657	2.9
1990	43 267	6 953	50 220	13.6	7 361	1.6
1995	94 741	3 319	106 205	23.3	8 164	1.8
1996	104 202	1 799	110 511	22.7	9 288	1.9
1999	86 878	655	89 329	15.1	7 508	1.3

a The details on Commonwealth government securities indicate the gross debt. A more accurate measure, net debt, takes account of the securities held by the government itself (and other adjustments).

SOURCE: 1950 to 1990, Reserve Bank of Australia, Australian Economic Statistics 1949–50 to 1994–95, *Occasional Paper No. 8, 1996; 1991 to 1999, Reserve Bank of Australia,* Bulletin, *various issues.*

QUANTITATIVE ASPECTS

There is no denying it—the absolute size of the Commonwealth public debt is so large (about $89.3 billion as of June 1999) as to be almost beyond comprehension. But we must not fear large numbers *per se*. Let us therefore put the size of the public debt in better perspective.

Debt and GDP

A bald statement of the absolute size of the debt glosses over the fact that the wealth and productive ability of our economy have also increased tremendously over the years. It is safe to say that a wealthy nation has greater ability to incur and carry a large public debt than does a poor nation. In other words, it seems more realistic to measure changes in the public debt in relation to changes in the economy's GDP.

Column 4 in Table 9.2 presents such data. Note that although the debt increased substantially between 1969–70 and 1998–99, as shown in column 3, we find that the relative size of the debt declined from around 43 to about 15 per cent of GDP during the same period.

Interest charges

Many economists feel that the primary burden of the debt is the annual interest charge that accrues as a result of the debt. The absolute size of these interest payments is shown in column 5. Interest charges as a percentage of GDP are presented in column 6. In these latter terms, the burden of the debt has fallen over time, although the ratio increased significantly during the mid-1980s and mid-1990s. It was, as of June 1999, at something of a historical low at around 1.3 per cent of GDP.

Private debt

Although the size and growth of public debt are looked upon in awe and alarm, private debt has grown much faster. If you insist upon worrying about debt, you will do well to concern yourself with private rather than public indebtedness. At the end of 1998–99 the outstanding credit made available to the household, unincorporated business and incorporated business sectors amounted to $590.1 billion, or about 6.6 times the level of public debt.

MYTHS

How do the public debt and its growth affect the operation of the economy? Can a mounting public debt bankrupt the nation at some point? Does the debt somehow place an unwarranted economic burden upon our children and grandchildren?

These are essentially false or bogus issues. The debt is not about to bankrupt the government or the nation. Nor, except under certain specific circumstances, does the debt place a burden upon future generations.

Going bankrupt

Can a large public debt somehow bankrupt the government, making it unable to meet its financial obligations? The basic answer to this question is 'no', and the rationale for this response entails two points:

1 *Refinancing:* The first point to note is that there is no reason why the public debt need be reduced, much less eliminated. In practice, as portions of the debt fall due each month, government does not typically cut expenditures or raise taxes to provide funds to retire the maturing bonds. (We know that with depressed economic conditions, this would be unwise fiscal policy.) Rather, the government simply refinances the debt—that is, sells new bonds and uses the proceeds to pay off holders of the maturing bonds.

2 *Creating money:* An even more important consideration that makes bankruptcy difficult to imagine is that the federal government has the power to print money with which to pay both principal and interest on the debt. A government bond simply obligates the government to redeem that bond for some specific amount of money on its maturity date. Government can use the proceeds from the sale of other bonds or it can create the needed money to retire the maturing bonds. As we will find later, the creation of new money to pay interest upon or to retire debt may be inflationary. But the present point is that it is difficult to conceive of governmental bankruptcy when government has the power to create new money by running the printing presses!

Shifting burdens

Does the public debt impose a burden on future generations? We must first ask: to whom do we owe the public debt? The answer is that we owe it to ourselves! The vast bulk of our government securities is held internally (about 97 per cent in June of 1998–99); that is, owned and held by citizens and institutions (banks, businesses, insurance companies, government agencies and trust funds) within Australia. Thus the public debt is also a public credit.

While the public debt is a liability to the Australian people (as taxpayers), that same debt is simultaneously an asset to the Australian people (as bondholders). Retirement of the public debt would therefore call for a gigantic transfer payment where Australian individuals and institutions would pay higher taxes and the government in turn would pay out those tax revenues to those same taxpaying individuals and institutions in the aggregate in redeeming the bonds they hold. Although a redistribution of wealth would result from this gigantic financial transfer, it need not entail any immediate decline in the economy's aggregate wealth or standard of living. The repayment of an internally held public debt entails no leakage of purchasing power from the economy of the country as a whole.

We noted earlier that the public debt increased sharply during World War II. Was some of the economic burden of World War II, for example, shifted to future generations by the decision to finance military purchases through the sale of government bonds? Again, the answer is 'no'.

Recalling the production possibilities curve, we can see that the economic cost of World War II consisted of the civilian goods that society had to forgo in shifting scarce resources to war goods production. Regardless of whether the financing of this reallocation was achieved through higher taxes or borrowing, the real economic burden of the war would have been essentially the same. In short, the burden of the war was borne by the people who lived during the war; they were the ones who did without a multitude of consumer goods.

Synopsis: So far we have said two things about the economic implications of the public debt. First, given that the government (a) need only refinance (not retire) the debt, and (b) has the power to create money, there is no fear of the government going bankrupt. Second, the debt is not a means of shifting economic burdens from one generation to another.

ECONOMIC IMPLICATIONS

Having made these points, we must be careful not to whitewash the public debt. The existence of a large public debt does pose both real and potential problems.

External debt

Externally held debt is a burden. This part of the public debt is obviously not 'owed to ourselves', and in real terms the payment of interest and principal

requires the transfer of a portion of our real output to other nations. However, the public component of this debt is currently relatively small, and stood at 3 per cent of the total in June 1999.

Incentives

Table 9.2 indicates that the present annual debt necessitates an annual interest payment of just over $7.5 billion. With no increase in the size of the debt, this annual interest charge must be paid out of tax revenues. These added taxes may tend to dampen incentives to bear risk, to innovate, to invest and to work. In this indirect way, the existence of a large debt may impair economic growth.

Income redistribution

Bond ownership is concentrated among the wealthier groups in society, and the federal tax structure is basically proportional. Therefore, payment of interest on the debt may contribute to income inequality.

Business IMPLICATION **JUSTIFYING BUDGET DEFICITS AND PUBLIC DEBT**



Keynes, when advocating discretionary fiscal policy, clearly favoured a balanced budget when considered over the business cycle. Keynes's principles suggest the running of a deficit during downturns in economic activity and budget surpluses during periods of upswing in economic activity. However, this would suggest that the public sector would move both in and out of deficit over the length of the business cycle. How then might we justify the presence of a positive level of public debt that exists through both boom and recession? Are we living the high life at the cost of our children and their children if we have positive levels of public debt?

The answer to these questions is, 'It depends'. At a very simple level we can argue that if we build up public debt due to government consumption expenditures, we are, indeed, increasing our current consumption at the cost of our descendants. On the other hand, if we accumulate a public debt due to investment in long-lived assets (for example, highway systems, sewerage systems, bridges, tunnels, hospital buildings, research and development activities) then we can reasonably argue that our descendants should bear some of the cost. This is due to the fact that they will benefit from the assets, which offset the cost to them of the debt that they continue to service. Thus, the passing of liabilities to our descendants is acceptable if we pass on assets to match.

CROWDING-OUT AND THE STOCK OF CAPITAL

This brings us to a potentially more serious problem. As an exception to our earlier comments, there is one important way by which the public debt can transfer a real economic burden to future generations. And that is by causing future generations to inherit a smaller stock of capital goods—a smaller 'national factory', so to speak—than would otherwise be the case. This possibility involves the crowding-out effect that, you will recall, is the notion that deficit financing will increase interest rates and so reduce investment spending. If this should happen, future generations would inherit an economy with a smaller productive capacity and, hence, other things being equal, the standard of living would be lower than otherwise.

How might this happen? Let us suppose that the economy is operating at the full-employment or capacity level and that the federal budget is initially in balance.

Now, for some reason, government increases its level of spending. We know from our earlier discussion of the economic burden of World War II that the impact of this increase in government spending will fall upon the population living at the time it occurs. Think of the production possibilities curve in Chapter 2 with 'government goods' on one axis and 'private goods' on the other. In a full-employment economy an increase in government spending will move the economy along the curve in the direction of the government goods axis, which clearly means that fewer private goods will be available.

Global SNAPSHOT — SAVING, INVESTMENT AND FOREIGN DEBT



Country or region	Per cent of GDP (1997) Gross domestic investment	Gross domestic savings	Foreign debt[a]
Australia	20	21	..
Brazil	21	19	23
Canada	18	21	..
China, mainland	38	43	15
China, Hong Kong SAR	34	31	..
France	17	20	..
Germany	21	22	20
Greece	19	11	..
India	24	20	20
Indonesia	31	31	62
Italy	17	22	..
Japan	30	30	..
Malaysia	43	44	47
Mexico	26	26	37
New Zealand	22	22	..
Philippines	25	15	51
Russian Federation	22	25	27
Singapore	37	51	..
South Korea	35	34	33
Spain	21	21	..
United Kingdom	16	15	..
United States	18	16	..
Europe EMU	19	22	
World	**22**	**23**	

a Refers to the ratio of total foreign debt to GNP.
.. Indicates that data were not provided.

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. Do countries with a high savings ratio have a high level of investment relative to GDP? Are there any countries that provide exceptions to any general pattern that you observe in the data?
2. Is a high savings ratio a requirement for funding a high ratio of investment to GDP? Explain.
3. According to the data available, is there an apparent relationship between low savings ratios and the ratio of foreign debt to GNP? Explain any apparent anomalies that you observe.

But the problem is that private goods may be either consumer or investment goods. If the increased government goods are provided at the expense of consumer goods, then the present generation bears the entire burden in the form of a lower current standard of living. The current investment level is not affected and, therefore, neither is the size of the national factory inherited by future generations. But if the increase in government goods entails a reduction in the production of capital goods, then the present generation's level of consumption (standard of living) will be unimpaired. However, our children and grandchildren will inherit a smaller stock of capital goods and, therefore, will realise lower income levels than otherwise.

Two qualifications

But there are two important loose ends to our discussion which might mitigate or even eliminate the size of the economic burden shifted to future generations:

1 *Public investment:* Our discussion has glossed over the character of the increase in government spending. Just as private goods may involve consumption or investment, so it is with public goods. If the increase in government spending is essentially consumption-type outlays, such as subsidies for school lunches or the provision of limousines for government officials, then a conclusion that the debt increase has shifted a burden to future generations is correct. But what if the government spending is primarily in the form of investment-type outlays such as the construction of highways? Similarly, what if the government spending is largely on 'human capital' investments in education, health, and research and development? Like private expenditures on machinery and equipment, these kinds of expenditures are investments that increase the economy's future productive capacity. Hence, in this case the capital stock of future generations need not be diminished; rather, its composition is changed so there is more public capital and less private capital.

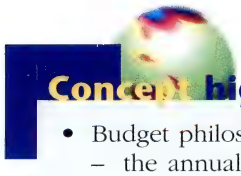
2 *Unemployment:* This qualification relates to our assumption that the initial increase in government expenditures occurs when the economy is operating at full employment. Again our production possibilities curve reminds us that, if the economy is at less than full employment or, graphically, operating at a point inside the production possibilities frontier, then an increase in government expenditures can move the economy to the curve without any sacrifice of either current consumption or capital accumulation. Hence, if unemployment exists initially, deficit spending by government need not entail a burden for future generations in the form of a smaller national factory.

POSITIVE ROLE OF DEBT

Having completed this brief survey of imagined and real problems associated with deficits and the public debt, let us conclude our discussion on a more positive note.

We must not forget that debt—both public and private—plays a positive role in a prosperous and growing economy. We know that as income expands, so does saving. Employment theory and fiscal policy tell us that if aggregate spending is to be sustained at the full-employment level, this expanding volume of saving or its equivalent must be obtained and spent by consumers, businesses or government. The process by which saving is transferred to spenders is debt creation. Now, in fact, consumers and businesses do borrow and spend a great amount of saving. Private debt has increased spectacularly—much faster than public debt—since World War II. But if households and businesses are not

willing to borrow and increase private debt sufficiently fast to absorb the growing volume of saving, an increase in public debt must absorb the remainder, or the economy will falter from full employment and fail to realise its growth potential.



Concept highlights

- Budget philosophies include:
  - the annually balanced budget, which suggests that the budget should achieve balance in each year
  - the cyclically balanced budget, which suggests that the budget should balance over the business cycle
  - functional finance.
- The basic problem with an annually balanced budget is that it is pro-cyclical rather than counter-cyclical. Similarly, it may be difficult to balance the budget over the course of the business cycle if upswings and downswings are not of roughly comparable magnitude. Thus the cyclically balanced budget is not always practical.
- Functional finance is the view that the primary purpose of government finance is to stabilise the economy, and that the problems associated with consequent deficits or surpluses are of secondary importance.
- The public debt in Australia has increased considerably in absolute terms over the last five decades. However, the level of the public debt fell during the late 1990s, due to public asset sales and the strength of the economy.
- In terms of Australia's ability to pay its interest bill on public debt, the key indicators are the share of government expenditure allocated to debt payments and the ratio of the interest liability on Commonwealth government debt to GDP. Each of these figures has declined significantly over the last five decades.
- Alternative implications and impacts of debt are possible. A large public debt may impair incentives to innovate and invest, 'crowd out' private investment and increase income inequality. Debt creation transfers saving to spenders and thereby may play a positive function in maintaining a high level of output and of employment.

AGGREGATE DEMAND–AGGREGATE SUPPLY, INFLATION AND THE IMPACT OF FISCAL POLICY

Our discussion so far has been entirely demand-oriented, as we have examined fiscal policy and the public debt. Let us now consider some supply-side complications, by examining the impact of fiscal policy when we include the effects related to the shape of the aggregate supply curve within the aggregate demand – aggregate supply model. Put simply, with an up-sloping aggregate supply curve, some portion of the potential effect of an expansionary fiscal policy upon real output and employment may be dissipated in the form of inflation. The same argument holds for the expansionary impact of an increase in net exports. The basic idea is something with which you should already be familiar. You will recall from Chapter 8 that an increase in the price level reduces the impact of investment on real output; a result of the interest-rate effect and real-balances effects.

FOREIGN-PURCHASES EFFECT

In the case of an open economy, we must add the foreign-purchases effect to the interest-rate and real-balances effects so as to completely reconcile the impact of an increase in the price level on real domestic output. An increase in the price level reduces net exports, reducing aggregate expenditures and equilibrium GDP. Why? Because, other things being equal, higher prices for Australian goods and services reduce Australian export sales and increase our imports of the now relatively cheaper foreign products. Conversely, a decrease in the price level increases the level of net exports, aggregate expenditures and equilibrium GDP. In terms of Figure 8.1, the foreign-purchases effect reinforces the interest-rate effect and real-balances effect, which allowed us to derive the down-sloping aggregate demand curve from the expenditures–output model.

CROWDING-OUT AND INFLATION

We have already discussed the potential for an expansionary fiscal policy to crowd out investment expenditures. Figure 9.2 allows us to illustrate this. Suppose in Figure 9.2(a) that a non-inflationary full-employment level of real GDP exists at Q_P.

We begin with aggregate demand at AD_1, which gives us an unemployment equilibrium at Q_1. Assume now that an expansionary fiscal policy is conducted that shifts the aggregate demand curve rightward to AD_2. In the absence of any price level increase, this would lead to an equilibrium level of real GDP of Q_P being achieved. However, we find that due to the presence of the up-sloping shape of the short-run aggregate supply curve, a part of the increase in aggregate demand will be dissipated in higher prices, with the result that the increase in real GDP is diminished and the economy therefore achieves output of only Q_2, rather than Q_P.

In terms of our aggregate expenditures model of Chapter 7, or our aggregate demand – aggregate supply model of Chapter 8, an expansionary fiscal policy may not increase aggregate expenditures by the full amount of the increase in government expenditures (or the increase in consumption associated with the reduction of a lump-sum tax). If the price level rises—as it does when the aggregate supply curve is up-sloping—the increase in government expenditures will be partially offset by declines in consumption, investment and net export expenditures. These declines

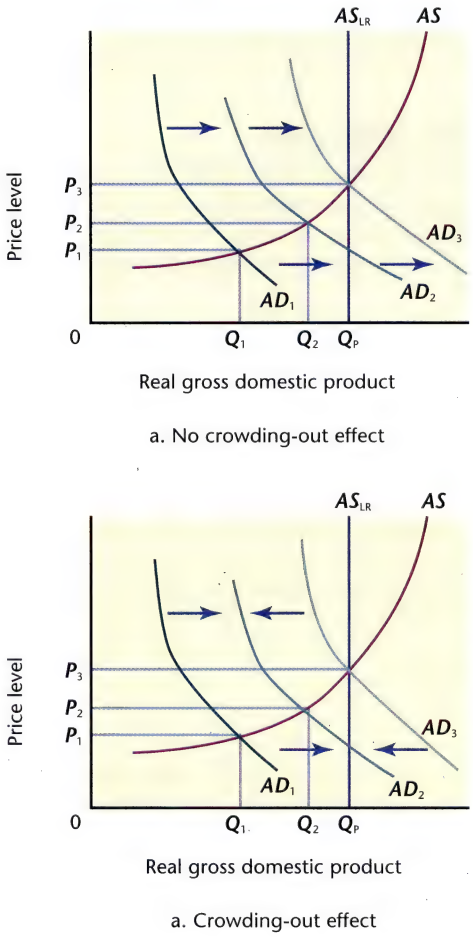


FIGURE 9.2
Fiscal policy within the aggregate demand – aggregate supply model: crowding-out, inflation and the net export effect

In (a) the upward slope of the short-run aggregate supply curve reminds us that part of the impact of an expansionary fiscal policy will be reflected in inflation rather than in increases in real domestic output and employment. In (b), the joint effect of both inflation and the crowding-out effect are shown to severely weaken fiscal policy when the economy is close to full employment. Finally, in (b) we assume that fiscal policy increases the interest rate, which attracts foreign financial capital to Australia. The Australian dollar therefore appreciates and our net exports fall, thus reducing the effectiveness of expansionary fiscal policy.

result respectively from the real-balances effect, interest-rate effect, and foreign-purchases effect created by the higher domestic price level; that is, the aggregate demand curve in Figure 9.2(a) shifts from AD_1 to AD_2, but we move upwards along AD_2 to the new equilibrium price level and level of real domestic output because of the up-sloping short-run aggregate supply curve. Demand-side fiscal policy cannot escape the realities imposed by the aggregate supply curve.

In the absence of any other complications, the presence of an up-sloping short-run aggregate supply curve suggests that a much more expansionary fiscal policy, such as that which shifts the aggregate demand curve from AD_1 to AD_3 in Figure 9.2(a), is required to move the economy from recession to full employment without inflation at Q_P.

However, as has already been suggested, a number of complications may exist. In Figure 9.2(b), we add in the crowding-out effect. Although fiscal policy is expansionary and designed to shift aggregate demand from AD_1 to AD_3, some investment may be crowded out so that aggregate demand ends up at AD_2. Equilibrium real GDP increases to only Q_2 rather than the desired Q_P. The crowding-out effect may weaken fiscal policy.

FISCAL POLICY AND THE OPEN ECONOMY

Additional complications arise when we allow for the fact that our economy is a component of the broader world economy.

SHOCKS ORIGINATING FROM ABROAD

Events and policies abroad that affect our net exports may have a major impact on our economy. This is especially so for a relatively small economy like that of Australia. Our economy is susceptible to unforeseen international aggregate demand shocks that can alter our GDP and render our fiscal policy actions inappropriate.

Suppose we are in a recession and so have changed government expenditures and taxes to levels that increase aggregate demand and GDP without precipitating inflation, as from AD_1 to AD_3 in Fig. 9.2(a). Now suppose that the economies of our major trading partners unexpectedly begin to expand rapidly. Greater employment and rising incomes in those nations translate into higher levels of purchases of Australian goods (especially raw materials). Our net exports rise, aggregate demand increases too rapidly, and we experience demand-pull inflation. Had we known in advance that our net exports would rise significantly, we would have enacted a less expansionary fiscal policy. The point is that our growing participation in the world economy brings with it the complications of mutual interdependence as well as the gains from specialisation and trade.

NET EXPORT EFFECT

An effect that we will term the **net export effect** may work through international trade to reduce the effectiveness of fiscal policy. We concluded in our discussion of the crowding-out effect that an expansionary fiscal policy might boost interest rates, thus reducing investment and weakening fiscal policy. Now we need to determine what effect such an increase in the interest rate might have on our net exports.

Net export effect: the impact of interest-rate-induced changes in the level of the exchange rate, and thus net exports, following changes in fiscal policy. The net export effect reduces the effectiveness of fiscal policy.

Suppose we conduct an expansionary fiscal policy that brings with it a higher interest rate. The higher interest rate will attract financial capital from abroad where interest rates presumably are unchanged. But foreign financial investors must acquire Australian dollars before purchasing the desired Australian securities. We know that an increase in the demand for a commodity—in this case Australian dollars—will raise its price. So the price of Australian dollars will rise in terms of foreign currencies; in other words, the dollar will appreciate.

What will be the impact of this dollar appreciation on our net exports? Because more units of foreign currencies are needed to buy our goods and services, foreigners will see our exports as being more expensive; hence, our exports will decline. Conversely, Australians, who can now exchange their dollars for more units of foreign currencies, will buy more imports. The consequence? Net export expenditures in Australia will diminish, and our expansionary fiscal policy will be partially negated.

Figure 9.2(b), can help us to clarify this point. An expansionary fiscal policy designed to increase aggregate demand from AD_1 to AD_3 may increase the domestic interest rate and ultimately reduce the level of our net exports by causing an appreciation of the currency. The fall in the net export component of aggregate demand will partially offset the expansionary fiscal policy. The aggregate demand curve will shift rightwards from AD_1 to AD_2, not to AD_3, and equilibrium real GDP will increase from Q_1 to Q_2, not to Q_P. Hence, the net export effect of fiscal policy joins our other factors of timing, political problems, crowding-out and inflation in complicating the management of aggregate demand.

Table 9.3 summarises the net export effect resulting from fiscal policy. Specifically, column 2 reviews the analysis discussed earlier and illustrated in Figure 9.2(b). But note that the net export effect works in both directions. By reducing the domestic interest rate, a contractionary fiscal policy tends to increase net exports. In this regard, you should follow through the analysis in column 1 of Table 9.3 and relate it to the aggregate demand – aggregate supply model.

Table 9.3 Fiscal policy and the net export effect

(1) Contractionary fiscal policy	(2) Expansionary fiscal policy
Problem: Inflation	Problem: Recession and slow growth
↓	↓
Contractionary fiscal policy	Expansionary fiscal policy
↓	↓
Lower domestic interest rates	Higher domestic interest rates
↓	↓
Decreased demand for Australian dollars	Increased demand for Australian dollars
↓	↓
Australian dollar depreciates	Australian dollar appreciates
↓	↓
Net exports increase (aggregate demand increases, partly offsetting the effect of contractionary fiscal policy)	Net exports decrease (aggregate demand decreases, partly offsetting the effect of expansionary fiscal policy)

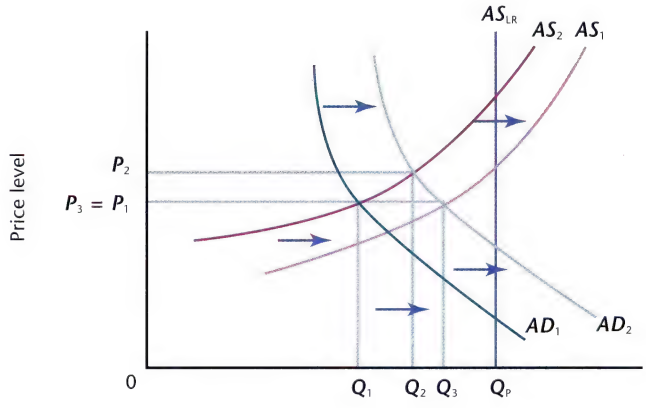
FISCAL POLICY AND AGGREGATE SUPPLY

While we have seen how movements along the aggregate supply curve can complicate the operation of fiscal policy, we now turn to the possibility of a more direct link between fiscal policy and aggregate supply. Economists have come to recognise that fiscal policy—especially tax changes—may alter aggregate supply and thereby affect the price level – real output outcomes of a change in fiscal policy.

Suppose, examining Figure 9.3, that aggregate demand and aggregate supply are presently at AD_1 and AS_1. The equilibrium level of real domestic output is Q_1 and the price level is P_1. Assume further that the level of unemployment associated with Q_1 is too high and that an expansionary fiscal policy is therefore introduced in the form of a fall in taxes. We know that the demand-side effect is to increase aggregate demand from AD_1 to, say, AD_2. This shift increases real GDP to Q_2, but also increases the price level to P_2.

FIGURE 9.3
Supply-side effects of fiscal policy

The traditional view is that tax cuts will increase aggregate demand from AD_1 to AD_2, thereby increasing both real domestic output (Q_1 to Q_2) and the price level (P_1 to P_2). If the tax reductions induce favourable supply-side effects, short-run aggregate supply will shift rightwards as from AS_2 to AS_1. This allows the economy to realise an even higher level of real domestic output (Q_3 rather than Q_2) and a lower price level (P_3 as opposed to P_2).



How might tax cuts affect aggregate supply? Some economists—appropriately labelled supply-side economists—feel strongly that tax reductions will shift the aggregate supply curve significantly to the right. By what means? Lower taxes increase disposable incomes and thus increase household saving. Similarly, tax reductions on businesses increase the profitability of investment. In brief, lower taxes increase the volumes of both saving and investment, thereby increasing the rate of capital accumulation. Stated differently, the size of our 'national factory'—our productive capacity—grows more rapidly than otherwise.

Furthermore, lower personal income tax rates also increase after-tax wages—that is, the price paid for work—and thereby stimulate work incentives. Many of those not already in the labour force offer their services now that after-tax wages are higher. Those already in the labour force want to work longer hours and take fewer vacations. Lower tax rates also encourage risk takers. Individuals and businesses are more willing to risk their energies and financial capital on new production methods and new products when lower tax rates promise them a larger potential after-tax reward. In short, through all these avenues, lower taxes shift aggregate supply rightwards, as from AS_2 to AS_1 in Figure 9.3. Thus the price level is reduced from P_2 to P_3, providing a further increase in real domestic output from Q_2 to Q_3. Note that the long-run aggregate supply curve may also shift rightwards if changes to the tax rates lead to permanent changes in labour market supply and productivity.

Supply-siders also contend that lower tax rates need not result in lower tax revenues. In fact, lower tax rates can be expected to generate increases in tax revenues. The rationale? Tax rate reductions give rise to a substantial expansion of output and income. This enlarged tax base enhances total tax revenues even though tax rates are lower. Thus, while the Keynesian view is that a reduction in tax rates reduces tax revenues and increases budget deficits, the supply-side view is that tax rate reductions can increase tax revenues and reduce deficits.

Most economists are cautious concerning the supply-side effects of tax cuts. Why? First, the hoped-for positive effects of a tax reduction on incentives to work, save and invest, and bear risks are not nearly as strong as supply-siders believe. Secondly, any rightward shifts of the aggregate supply curve are of a long-term nature, while the demand-side impact is more immediate. The controversies surrounding supply-side economics will resurface in Chapter 13.



Concept highlights

- The enactment and application of appropriate fiscal policy are subject to certain problems and questions. Some of the most important relate to the impact of unforeseen events on the appropriateness of fiscal policy; the impact of inflation on the stimulus provided by fiscal policy; the potential for fiscal policy to crowd out private expenditures; and the complications that arise from having an open economy.
- An expansionary fiscal policy may be weakened if it crowds out some private investment spending. This will occur as aggregate demand is increased through fiscal policy and interest rates increase with the price level. Additionally, some of the effect of an expansionary fiscal policy may be dissipated in inflation due to the presence of the foreign-purchases effect and wealth effect of an increase in the price level.
- Fiscal policy may be rendered ineffective or inappropriate by unforeseen events occurring within the world economy. Foreign demand shocks may either weaken or strengthen the impact of expansionary fiscal policy through their impact on the demand for net exports.
- Fiscal policy may precipitate changes in exchange rates that weaken its effects. Where fiscal policy leads to an increase in domestic interest rates, the currency will appreciate, reducing net exports. This offsets the stimulus provided by the expansionary fiscal policy. The converse applies to a contractionary fiscal policy.
- Supply-side economists contend that Keynesian analysis of fiscal policy frequently fails to consider the effects of tax changes upon aggregate supply. When conducted in the form of a lowering of tax rates, fiscal policy may encourage individuals and businesses to spend capital on new production methods and new products. As a result, the short-run aggregate supply curve will shift to the right, providing a further stimulus to the economy.

Asian FOCUS — SAVINGS AND THE RATE OF GROWTH

Savings, as a source of funds for investment spending and expenditure on the purchase of consumer durables, are often focused on as prerequisite for growth. Here we present data enabling you to examine this relationship within our region.

Country or region	Gross domestic savings, 1997 (per cent of GDP)	Growth in GNP, 1996–97 (per cent)
Australia	21	0.6
China, mainland	43	8.5
China, Hong Kong SAR	31	5.2
India	20	6.1
Indonesia	31	4.3
Japan	30	−2.3
Malaysia	44	7.5
New Zealand	22	0.9
Singapore	51	8.8
Thailand	36	−1.1
Vietnam	21	5.6
Low- and middle-income countries in:		
East Asia and Pacific	38	5.2
Europe and Central Asia	21	8.8
South Asia	18	..
World	**23**	**3.2**

.. *Indicates that data were not provided.*

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. Graph the growth rate of GNP against the savings ratio for each of the countries in the first part of the table above. Does there appear to be a positive relationship between the savings ratio and the rate of economic growth?
2. Is there sufficient information and evidence in the data in the table for you to reach a conclusive answer on any relationship between savings ratios and economic growth? In what way is it deficient?
3. Which countries appear to provide exceptions to the general trend that you have observed from the data? How might you explain some of these exceptions?
4. Can a nation fund its investments and consumption at a level higher than that currently provided by its income? Explain. What are the longer-term implications of this type of behaviour?

SUMMARY

1 The main categories of federal expenditures relate to social security and welfare, health and defence. Revenues come primarily from personal income tax, indirect taxes—in the form of the goods and services tax (GST) and excise taxes—and company income taxes. The introduction of the GST on 1 July 2000 has had a large impact on the relative share of tax revenue derived from alternative taxation sources. Income tax rates have generally been reduced, while the sales tax net has been widened to include services. This has led to a greater emphasis on indirect taxes as a form of revenue raising.

2 Federal taxes on personal income are progressive, reflecting increasing marginal (tax per dollar of incremental income earned over a certain value) and average (tax paid divided by income earned) tax rates as income rises. The company income tax is probably progressive. General sales and excise taxes, and taxes imposed at the state level (such as payroll and property taxes) tend to be regressive, due to their application to specific goods regardless of income level. The GST, as a form of sales tax, is subject to significant criticism on equity grounds for this reason.

3 Discretionary fiscal policy may be actively used to influence the equilibrium level of real GDP. Increases in government spending expand, and decreases contract, the equilibrium level of GDP. Conversely, increases in taxes reduce, and decreases expand, the equilibrium level of GDP. Appropriate fiscal policy to correct for unemployment therefore entails increases in government spending and decreases in taxes—that is, a budget deficit. Decreases in government spending and increases in taxes—that is, a budget surplus—are appropriate fiscal policy for correcting demand-pull inflation.

4 The impact of discretionary fiscal policy reflects the way that the issue or retirement of government debt is managed. When government finances a deficit by borrowing in the investment and longer-term markets for funds, the rate of interest in these markets will increase. This will increase the cost of investment and reduce investment expenditures. Alternatively, the deficit may be financed by the creation of additional money by the Reserve Bank, and accommodated by its monetary policy stance. If this is done, there will be little impact on interest rates and hence on the level of investment.

5 Budget surpluses may be used to retire debt. The removal of government sales of debt from the investment markets will tend to reduce the cost of investment funds and increase investment. Alternatively, surplus funds may be kept idle, which will leave interest rates and investment largely unaffected.

6 Non-discretionary fiscal policy refers to the automatic adjustments that occur to the government's fiscal balance over the course of the business cycle. As the economy moves through recovery and to the peak of the business cycle, net tax revenues will increase, improving the budget balance. The converse applies as the economy moves through recession to the trough of the business cycle.

7 Non-discretionary fiscal policy reflects the built-in stabilisers present in our mixed economic system in the form of income-sensitive company tax, income tax and to a lesser extent sales taxes. Because a fall in GDP is associated with a deterioration in the budget deficit and an increase in GDP with an improvement, these taxes effectively help to stabilise output.

8 The cyclically adjusted budget deficit indicates what the federal budget deficit would be if the economy operated at its potential output level throughout the year. The cyclically adjusted budget deficit is a more meaningful indicator of the government's fiscal posture than is its actual budget deficit (or surplus). However, its definition relies heavily on an understanding of both the natural rate of unemployment and the economy's potential output level.

9 The problems and criticisms related to the use of fiscal policy include problems of timing, political problems and the crowding-out effect. Problems of timing exist due to lags in recognition, administration and the operation of fiscal policy. Political problems exist in the form of the presence of alternative goals for government, the presence of an expansionary bias in the political system and the potential for the existence of a political business cycle. (This cycle is based on government creating a prosperous economic environment in which to stand for re-election, then implementing a contractionary fiscal policy to control the resulting increase in inflation, and then supporting another expansion in time for the next election.) The crowding-out effect suggests that where the government competes for funds with private industry, its debt issue will increase the cost of investment funds and reduce the level of private investment.

10 Budget philosophies include:

- the annually balanced budget, which suggests that the budget achieve balance in each year
- the cyclically balanced budget, which suggests that the budget should balance over the business cycle
- functional finance.

The basic problem with an annually balanced budget is that it is pro-cyclical rather than counter-cyclical. Thus it will tend to worsen recession during economic downturns and increase inflationary pressures during booms. Within the cyclically balanced budget framework, there will be difficulties in balancing the budget over the course of the business cycle if, as is frequently the case, upswings and downswings in economic activity are not of roughly comparable magnitude or duration. Thus the cyclically balanced budget is not always practical.

11 Functional finance is not truly a view of the budget, but one of its role in managing the economy. Functional finance suggests that the primary purpose of government finance is to stabilise the economy, and that the problems associated with consequent deficits or surpluses are of secondary importance. This clearly ignores the potential for problems to emerge if the debt is not maintained at manageable levels.

12 The public debt in Australia has increased considerably in absolute size over the last five decades, with significant increases occurring in the 1980s and early 1990s. However, during the late 1990s the level of the public debt fell, due to public asset sales and the strength of the economy. In terms of government's ability to service the interest bill on public debt, the key indicators are the share of government expenditure allocated to debt payments and the ratio of the interest liability on Commonwealth government debt to GDP. Each of these figures has declined significantly over the last five decades.

13 There are alternative views of the implications and impact of public debt. It has been suggested by opponents of public debt that a large public debt may:

- impair incentives to innovate and invest, due to the high tax levels required to service the debt
- crowd out private investment, through the demand by government for funds from the investment markets
- increase income inequality.

Those in favour of public debt suggest that its creation transfers saving to spenders. It may, therefore, play a positive function in maintaining a high level of output and of employment.

14 The enactment and application of appropriate fiscal policy are subject to certain problems and questions. Some of the most important relate to the impact of unforeseen events on the appropriateness of fiscal policy; the impact of inflation on the stimulus provided by fiscal policy; the potential for fiscal policy to crowd out private expenditures; and the complications that arise from having an open economy. This latter effect reflects the fact that an increase in a country's exports or a decrease in its imports will have an expansionary effect upon its GDP, while a decline in exports or an increase in imports will have a contractionary impact upon GDP.

15 An expansionary fiscal policy may be weakened if it crowds out some private investment spending. This will occur as aggregate demand is increased through fiscal policy and interest rates increase with the price level. Additionally, some of the effect of an expansionary fiscal policy may be dissipated in inflation, due to the presence of the foreign-purchases effect and wealth effect of an increase in the price level.

16 Fiscal policy may be rendered ineffective or inappropriate by unforeseen events occurring within the world economy. Foreign demand shocks may either weaken or strengthen the impact of expansionary fiscal policy, through their impact on the demand for net exports. Additionally, fiscal policy may precipitate changes in exchange rates that weaken its effects. Where expansionary fiscal policy leads to an increase in domestic interest rates, the currency will appreciate, reducing net exports. This offsets the stimulus provided by the expansionary fiscal policy. Where contractionary fiscal policy leads to an decrease in domestic interest rates, the currency will depreciate, increasing net exports. This offsets the income-reducing impact provided by the contractionary fiscal policy.

17 Supply-side economists contend that Keynesian analysis of fiscal policy frequently fails to consider the effects of tax changes upon aggregate supply. When fiscal policy takes the form of a lowering of tax rates, it may provide incentives for spending on new production methods and new products, and thus affect productivity and work effort. This will shift the short-run aggregate supply curve to the right, providing a further stimulus to the economy. If changes in taxes have a permanent effect on productivity and work effort, the long-run aggregate supply curve will also shift rightwards, increasing the economy's productive capacity.

KEY TERMS *and* CONCEPTS *to remember*

annually balanced budget 310
average tax rate 297
built-in stabiliser 305
crowding-out effect 309
cyclically adjusted budget deficit 306
cyclically balanced budget 310
discretionary fiscal policy 300
double taxation 299
excise duties 299
expansionary and contractionary fiscal policies 301
fiscal drag 305
fiscal policy 296
functional finance 311
goods and services tax (GST) 298
imputation system 299
marginal tax rate 297
net export effect 320
non-discretionary fiscal policy 304
personal income tax 297
political business cycle 308
public debt 310
sales taxes 299
specific purpose grants 297

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What are the most important sources of revenue at the federal level? What are the major types of expenditure at the federal level? List each.

2 Precisely what is meant by a progressive tax? Precisely what is meant by a regressive tax? What do you think a proportional system of taxation implies?

3 What are built-in stabilisers? Explain the functioning of the built-in stabilisers. How might the effect of fiscal drag associated with their presence be offset? Explain.

4 Define the cyclically adjusted budget deficit. Explain its significance for the interpretation of actual budget deficits.

5 Briefly state and evaluate the major problems encountered in enacting and applying fiscal policy. Explain the idea of the political business cycle.

6 What is the crowding-out effect and what is its relevance to fiscal policy? In what respect is the net export effect similar to the crowding-out effect? Explain.

7 Explain the alternative 'budget philosophies'. To which do you subscribe? Explain why?

8 Why is an annually balanced budget not economically neutral? Would this approach to budget formulation be stabilising or destabilising for the economy? Explain.

9 'No budget-balancing principle can be as important as maintaining full employment and preventing inflation.' Do you agree? With which viewpoint on the role of public debt would this statement be associated?

10 Comment upon the size and causes of the public debt. How does an internally held public debt differ from an externally held public debt? What would be the effects of retiring an internally held public debt? Distinguish between refinancing and retiring public debt.

11 Some economists argue that the quantitative importance of the public debt can best be measured by interest payments on the debt as a percentage of the GDP. Can you explain why?

12 Evaluate the following statement: 'A national debt is like a debt of the left hand to the right hand.'

13 'The least likely problem arising from large public debt is that the government will go bankrupt.' Explain.

14 What complications arise in the use of fiscal policy when we account for the fact that we operate in an open economy? Explain.

Problems & exercises

1 Comment on the degree to which each of the following taxes is progressive or regressive, indicating in each case your assumption concerning tax incidence:

(a) the federal personal income tax

(b) a 3 per cent general sales tax

(c) a federal excise tax on beer

(d) the federal company income tax.

Explain your conclusions.

2 Using the aggregate demand – aggregate supply model, explain how discretionary fiscal policy can be used to reduce the effects of demand-pull inflation.

3 How may fiscal policy be used to increase the equilibrium level of real GDP while minimising the impact on inflation? Use the aggregate demand – aggregate supply model as the framework for your answer.

4 Is the crowding-out effect likely to be larger during recession or when the economy is near full employment? Use the aggregate demand – aggregate supply model to substantiate your answer.

5 Demonstrate graphically the potential effects of an increase in tax rates using the aggregate demand – aggregate supply model. Explain why you have shown these effects in this particular way. What are your assumptions? Explain.

Application & analysis

1 What are the current rates of personal income tax? Visit the website of the Australian Taxation Office (ATO) at:
http://www.ato.gov.au/

Find the marginal rates that apply to each level of income. Briefly describe the mechanics of the federal personal income tax. What is happening to the marginal tax rate as income increases? Explain.

2 From your data in the previous question, calculate the average rate of tax that applies at each level of income specified in the tax schedule from the ATO. Why is the average or effective personal income tax rate less than the marginal tax rate? Explain. Indicate whether Australia's system of personal taxation is progressive, proportional or regressive. What generalisation can you offer concerning the relationship between marginal and average tax rates?

3 Is Australia a high-tax country? Visit the OECD's website at:
http://www.oecd.org/

Go to the statistics section and find the tax revenue share of GDP provided by the OECD for the different countries. What is your conclusion? Explain.

A LAST WORD THE TWIN-DEFICITS HYPOTHESIS

Successive Australian governments have focused during the last decade on increasing the national savings. Two avenues have been tried in this attempt: the introduction of broad-based superannuation for the Australian workforce; and revisions to our tax system, via a goods and services tax, to encourage saving at the expense of consumption. The twin-deficits argument provides an explanation of why the desire to increase national savings may be important.

A deficit on the current account is a long-term feature of the Australian economy (Chapter 5). We have gradually been increasing our net external debt position for some time. A feature of this deterioration in the current account balance over most of the last two decades is the trend increase in the size of the deficit on the income balance of the current account.

How might we explain this fairly consistent deterioration in the current account balance? One explanation focuses on the links between national savings and the current account, and examines the roles of private and government saving. The argument revolves around what is known as the twin-deficits hypothesis—a deficit in our ability to finance private investment through our own savings will tend to generate a deficit in the current account balance.

An insight into the relationship between the current account balance, private saving and investment, and the budget deficit can be seen by considering the expenditures and income approaches to measuring GDP (Chapter 4). The two major components of the balance of payments that we will concern ourselves with here are the balance on goods and services and the income balance.

From our analysis of the national accounts (Chapter 4), we know that for the open economy:

$$\text{GDP} = C + I + G + X - M \text{ (expenditure basis)}$$

where GDP is gross domestic product, C is private consumption, I is private investment, G is government expenditure, and X and M are exports and imports of goods and services, respectively.

In addition to the above, we can show the possible uses or division of the incomes generated:

$$\text{GDP} = C + S + T + R_f \text{ (income basis)}$$

where GDP and C are defined as before, S is private savings, T is net tax revenue collected by the government (taxes less subsidies etc.) and R_f is net transfers to foreigners (the income balance and, to a lesser extent, the current transfers balance of the current account balance).

For equilibrium to exist in an economy, we know that incomes must equal expenditures (Chapters 6 and 7), and so:

$$C + I + G + X - M = \text{GDP} = C + S + T + R_f$$

Thus:

$$C + I + G + X - M = C + S + T + R_f$$

Removing C from both sides we obtain:

$$I + G + X - M = S + T + R_f .$$

This can be rearranged to get a form of the equilibrium condition with which you should all be familiar:

$$I + G + X = S = T + M + R_f$$

The only term with which you may not be familiar is that of R_f. Transfers to foreigners provide another source of leakage (or injection) from (or into) the expenditure flow that you may not have explicitly considered before. However, the inclusion of this term improves the accuracy of our model and reflects the actual construction of the current account balance in the national accounts.

Rearranging the above, we can show that:

$$X - M - R_f = (S - I) - (G - T), \text{ or}$$

$$\text{CAB} = (S - I) - (G - T)$$

On the left-hand side of the equation CAB is the current account balance. On the right-hand side of the equation, $(S - I)$ is the excess of private investment over private saving, while $(G - T)$ represents the public sector borrowing requirement—thus the twin-deficits concept. What the above is attempting to show is a possible relationship between private-sector and public-sector plans and the current account balance. The higher I, *ceteris paribus*, the higher will be the level of the deficit in the CAB. The higher the level of $(G - T)$, the higher will be the level of CAB. Since the capital and financial accounts balance (KAB) is of equal size but opposite sign to

the current account balance under a system of floating exchange rates (CAB + KAB = 0), the higher the CAB, the higher will be the KAB.

It was this idea that underlay much of the economic policy in Australia throughout the second part of the 1980s and again in the latter part of the 1990s. These policies included the establishment of superannuation for most Australians in the late 1980s, and the drive to generate a public-sector surplus in both the late 1980s and again in the late 1990s. In the late 1990s this was reflected in the substantial sales of public-sector assets.

The requirement of superannuation for most Australians was partly aimed at providing a greater pool of national savings, allowing Australia to gradually reduce its dependence on the rest of the world for investment funds. Also, it was thought in Australia that by running a budget surplus the government might be able to reduce the deficit on current account. This would result if the government's improving budget position was able to slow down the rapid increase in net foreign debt that occurred through the second half of the 1980s, and that has again been a feature of the Australian economic landscape following the Asian crisis of the late 1990s.

Note that the twin-deficits analysis, as presented here, is too simple. The following complications will affect your analysis and solutions to the dilemma:

- the impact of the taxation system on the incentives to save (thus providing some justification for a GST)
- the deregulation of the financial system during the 1980s and the incentives this provided for corporations to borrow to invest
- the impact of interest rates on exchange rates and, therefore, incentives to invest in Australia—leading to capital inflows—and the competitiveness of Australian products both domestically and abroad
- foreigners becoming more cautious about lending to us due to concerns about the level of our foreign indebtedness
- the need to pay back foreign-sourced monies loaned to Australia—that is, make interest and principal payments. The use made of these funds is therefore very important. It is hoped that funds have been allocated to the purchase of assets that will enhance our productivity and productive capacity, allowing the funds borrowed from overseas to be repaid.

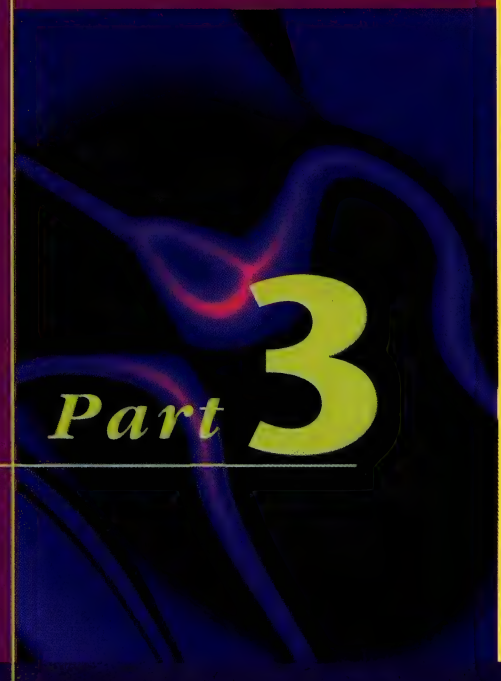
SOURCE: Ron McIver, March 2000.

Questions

1 'The use of basic national accounting statistics in the formulation of the twin-deficits hypothesis leaves us with an identity (something that is true by definition) rather than an explanation of actual events.' Discuss this statement, referring to the use of national accounting concepts in the twin-deficits model.

2 Using the national accounting concepts, can you provide an alternative interpretation of the relationship between the capital and financial accounts balance and the level and composition of the current account balance?

3 Why might the balance of income problem that Australia faces be too difficult to overcome with a simple expansion of net exports? Explain. What are the implications of this for activist fiscal policy?



Part 3

MONETARY POLICY AND ECONOMIC STABILITY



Chapter 10 MONEY, BANKING AND THE FINANCIAL SYSTEM

INTRODUCTION

The study of money—one of society's greatest inventions—is a fascinating part of economics.

> *Money bewitches people. They fret for it, and they sweat for it. They devise most ingenious ways to get it, and most ingenuous ways to get rid of it. Money is the only commodity that is good for nothing but to be gotten rid of. It will not feed you, clothe you, shelter you, or amuse you unless you spend it or invest it. It imparts value only in parting. People will do almost anything for money, and money will do almost anything for people. Money is a captivating, circulating, masquerading puzzle.*[1]

Money is also one of the most important elements of the economic system. It is much more to most economists than a passive component of the system, a mere tool that assists in the economy's operation. When operating properly, the monetary system provides the lifeblood of the circular flows of income and expenditure that typify all economies. A well-behaved monetary system will help to achieve both full production and full employment; that is, it will effect real economic activity. Conversely, a poorly functioning monetary system will amplify fluctuations in the economy's levels of output, employment and prices.

In this chapter we will examine the nature and functions of money and the major institutions of the Australian financial system. Of particular interest to us will be the banks, due to the fact that they represent the core of the monetary component of our financial system. Chapter 11 looks into the methods by which individual banks and the banking system as a whole can vary the money supply. In Chapter 12 we will discuss how the central bank of the economy may attempt to influence monetary conditions to promote full employment and price level stability. In Chapter 13 we will discuss some of the alternative economic viewpoints to the mainstream macroeconomics of Chapters 6 to 12. These include the classical, monetarist, new classical and post-Keynesian schools of thought.

LEARNING OBJECTIVES

- **Review the functions of money—particularly money as a medium of exchange, unit of account and store of value.**
- **Define what acts as money in our economy—the M_3 and broad money definitions.**
- **Determine what 'backs' the supply of money in Australia—what gives it its value and ability to be used almost universally.**
- **Explain the asset demand and transactions demand for money.**
- **Examine the institutional structure of the Australian financial system.**
- **Discuss the current role of the Reserve Bank of Australia.**

THE FUNCTIONS OF MONEY

What is money? Money is what money does. Anything that performs the functions of money is money. There are three functions of money.

MEDIUM OF EXCHANGE

Money as a medium of exchange: money is useable for buying and selling goods and services.

First and foremost, money is a **medium of exchange**; that is, money is useable for buying and selling goods and services. As a medium of exchange, money allows society to escape the complications of barter and reap the benefits of geographic and human specialisation (see Chapter 2).

UNIT OF ACCOUNT

Money as a unit of account: the use of the monetary unit as a yardstick for measuring the relative worth of heterogeneous goods and resources.

Money is also a **unit of account**. Society finds it convenient to use the monetary unit as a yardstick for measuring the relative worth of heterogeneous goods and resources. This has distinct advantages. With a money system, we need not state the price of each product in terms of all other products for which it might possibly be exchanged; that is, we need not state the price of cows in terms of corn, cream, cigars, cars or some other product. This use of money as a common denominator means that the price of each product need be stated only in terms of the monetary unit. By dramatically reducing the number of prices in the economy, this use of money permits buyers and sellers to compare easily the relative worth of various commodities and resources. Such comparisons support rational decision making. You will recall from Chapter 4 the necessity of using money as a unit of account in measuring GDP.

Money is also used as a unit of account for transactions involving future payments. Debt obligations of all kinds are measured in terms of money, allowing for the transfer of debt between individuals or organisations.

STORE OF VALUE

Finally, money serves as a **store of value**. Because money is the most liquid of all assets, it provides a very convenient form in which to store wealth. Most methods of holding money do not yield as high a level of monetary returns as we get by storing wealth in the form of real assets (property) or paper assets

Money as a store of value: the role of money as a form in which to store wealth, due to its liquidity and convenience.

(shares, bonds[2] and so on). However, money does have the advantage of being immediately useable by a firm or a household in meeting any and all financial obligations.



Concept highlights

- Money serves three main functions: medium of exchange, unit of account, and store of value.
- As a medium of exchange, money is used to conduct most transactions involving economic exchange between individuals, government and business.
- Money in its role as a unit of account serves as a convenient common denominator for the statement of the price of each product.
- Because money is the most liquid of all assets, it provides a very convenient form in which to store value or wealth.

THE SUPPLY OF MONEY

Basically, anything that is generally acceptable as a medium of exchange is money. Historically, such diverse items as whales' teeth, elephant-tail bristles, circular stones, nails, salt, slaves, cattle, beer, cigarettes and pieces of metal have functioned as media of exchange in different parts of the world. Currently in our economy, as we will soon explain, the debts of governments and of banks and other financial institutions are employed as money.

MONEY DEFINED: M_3

Neither economists nor public officials are in complete agreement about what specific items form the economy's money supply. In fact, technological and institutional developments, along with the deregulation of the financial sector during the 1980s and 1990s, have changed the accepted definition of money in Australia. Currently the Reserve Bank of Australia officially publishes two measures of the money supply. The first is denoted by M_3, the second by broad money.

M_3: the sum of currency (coins and notes), current (or demand) deposits in banks upon which cheques can be drawn, and non-current deposits in banks (e.g. savings).

As may be apparent from its name, the M_3 measure of the money supply covers a wider range of highly liquid assets than earlier measures of the money supply, M_1 and M_2, that were rendered largely obsolete by changes to the financial system.[3] There are three major components of M_3:

1 currency (coins and notes)

2 current (or demand) deposits in banks upon which cheques can be drawn

3 non-current deposits in banks (for example, savings).

The first item represents debts of the government and government agencies; the other two components represent debts of the banks. Table 10.1 gives us an idea of the quantitative importance of these items in both absolute and relative terms. Let us comment briefly on each of these components of the M_3 definition of the money supply.

Table 10.1 Money in Australia, June 1999

Monetary component	$ million	Percentage of M_3	Percentage of broad money
Currency	22 984	6.1	5.1
Current deposits with banks	93 346	24.8	20.7
Other deposits with banks	259 558	69.1	57.5
M_3	**375 889**	**100.0**	**83.2**
Borrowings from private sector by NBFIs[a]	93 371	n.a.	20.7
less currency and bank deposits by NBFIs	*17 682*	*n.a.*	*3.9*
Broad money	**451 578**	**n.a.**	**100.0**

a NBFI—non-bank financial institution

SOURCE: Reserve Bank of Australia, Bulletin, *December 1999.*

CURRENCY (COINS AND NOTES)

Ranging in value from 5 cents to $2, coins are the 'small change' component of our money supply and account for only a small portion of the total. Coins are essentially 'convenience money' because they permit us to make all kinds of very small purchases.

Token money: money for which the intrinsic value of the commodity used to hold the monetary unit (e.g. a coin or note) is less than the recorded value of the money.

Note that the coins in circulation in Australia are **token money**. This simply means that the intrinsic value—the value of the metal contained in the coin itself—is less than the face value of the coin. This is purposely the case so as to prevent people from melting down token money for profitable sale as bullion. If our 50 cent pieces each contained, say, 75 cents worth of silver bullion, it would be highly profitable to melt these coins for sale as bullion. Despite the illegality of such a procedure, 50 cent pieces would tend to disappear from circulation. This is one of the potential defects of commodity money—its worth as a commodity may come to exceed its worth as money, causing it to cease functioning as a medium of exchange.

Much more significant than coins are notes in the form of Australian notes—that is, notes issued by the Reserve Bank of Australia with the authorisation of the government. These notes range in value from $5 to $100 and are printed on plastic. The coin and note components of the money supply are frequently lumped together and simply labelled **currency**.

Currency: the coin and note components of the money supply.

Currency accounts for approximately 6.1 per cent of M_3 (Table 10.1). However, this figure understates the significance of currency as used in day-to-day transactions. Currency is the most frequently used method of payment in transactions, accounting for the majority of all transactions by *number*.

CURRENT DEPOSITS

The safety and convenience of using cheques, or bank money, have made **current deposits** an important type of money in Australia (Table 10.1). Despite the integrity of our postal employees, we would not think of placing, say, $4896.50 into an envelope and dropping it in a letterbox to pay a debt; however, to write and post a cheque for a large sum is common. Because the writing of a cheque requires the signature of the drawer, the theft or loss of our chequebook is not nearly so disastrous as would be the loss of an identical amount of currency. It is, furthermore, more convenient to write a cheque in many cases than it is to transport and count out a large sum of currency. For these reasons,

chequebook money has come to be an important form of money in Australian capitalism, especially for business transactions. In fact, payment by cheque accounts for about 30 per cent of the number and 12.5 per cent of the value of all non-currency transactions conducted outside the Reserve Bank of Australia's Reserve Bank Information and Transfer System (RITS).[4]

It might seem strange that current deposits are a part of the money supply. But the reason for their inclusion is clear—cheques, which are nothing more than a means for transferring the ownership of current deposits (the actual money) in banks, are generally acceptable as a medium of exchange. Further, current deposits can be immediately converted into currency on demand. Thus current accounts, when drawn upon by cheque, are for practical purposes the equivalent of currency.

NON-CURRENT DEPOSITS

Non-current deposits are certain highly liquid financial assets that can be readily converted into currency or current deposits, or transferred as payment for goods and services. The most important of these highly liquid assets are the various savings and term deposits (non-chequebook accounts) in the banks. Recent financial innovations, in particular the introduction of electronic funds transfer (EFT) technologies, have increased the importance of many of these non-current accounts as a source of payment.

The introduction of EFT has allowed the banks to provide households and businesses with automatic access to deposits in a range of non-current accounts. At the retail level, bank customers may use automatic teller machines (ATMs) to draw currency directly from their deposit accounts. Regular payments, such as health insurance and mortgages, may be deducted automatically from customers' deposit accounts at their request. In addition, Electronic Funds Transfer at Point of Sale (EFTPOS) makes possible the direct transfer of deposits from bank customers' accounts to those of retailers through the use of a debit card at the point of sale.

These innovations have been responsible for increasing the 'moneyness' of many non-current accounts—that is, they have increased the ease with which balances in these accounts can be used in payment for goods and services. A direct benefit of these innovations to both consumers and retailers is the reduced uncertainty for many retailers about their customers' ability to cover the cost of small transactions. This uncertainty had resulted in the refusal of many retailers to accept personal cheques as payment for goods and services.

The use of EFTs is not limited to small transactions by private individuals. Through the High Value Clearing System (HVCS), businesses may now settle accounts greater than $10 000 in value with other businesses via EFT.[5] In addition, EFTs are increasingly being used by government and businesses to make income payments in the form of direct entry transactions. Around 28 per cent of total non-currency transactions comprise direct credit transfers of salaries to employees' accounts by employers, government transfers to the accounts of welfare recipients, and debits in the form of direct payments to business.[6]

Again, as with cheques, it is important to remember that it is the non-current account that is money, not the debit card or EFT. Debit cards and EFTs simply provide the ability to transfer or access the non-current deposits (the actual money), in the same way that cheques facilitate the transfer of deposits from current accounts.

Business IMPLICATION

MOVE THAT MONEY ELECTRONICALLY



Money is not just cash, but also the bank accounts against which we can draw funds for rapid payment. Advances in the electronic transfer of funds have seen many types of bank account take on a greater degree of 'moneyness'. As the definition of money changes with both time and the advance of technology, so does the importance of the means of payment for business. The advent of Electronic Funds Transfer at Point of Sale (EFTPOS) means that businesses can now be paid from customers' bank accounts on the spot. The implication is that when EFTPOS is used the funds associated with the sale are more rapidly available to the business and can be used to earn interest, reduce the overdraft, or pay debts much sooner.

BROAD MONEY

Broad money: M_3 *plus* the borrowings from the private sector of non-bank financial institutions (NBFIs) *less* holdings of currency and bank deposits by the NBFIs.

Non-bank financial institutions (NBFIs): permanent building societies, credit cooperatives, authorised money market dealers, money market corporations (merchant banks), pastoral finance companies, finance companies, general financiers, and cash management trusts.

Broad money adds to M_3 the borrowings from the private sector of a range of **non-bank financial institutions (NBFIs)**, less holdings of currency and bank deposits by these NBFIs (to avoid double-counting). The NBFIs whose deposits are counted as part of broad money are permanent building societies, credit cooperatives, authorised money market dealers, money market corporations (merchant banks), pastoral finance companies, finance companies, general financiers, and cash management trusts.

Many of the features of 'money' associated with the components of M_3 are replicated by the accounts and services provided by the above NBFIs. For example, building societies accept the funds of relatively small savers as term deposits and often provide access to ATM, cheque and EFT facilities. The funds borrowed from the public are made available to investors by extending mortgage loans or by purchasing marketable securities. Clearly, credit cooperatives, pastoral finance companies and finance companies also offer a range of services to business and to individual consumers similar to some of those offered by the banks.

As we move further into the regulatory environment fostered by the implementation of recommendations of the Financial System Inquiry (the Wallis Report), we will find that more non-bank institutions will provide 'money' services. These institutions will range from Internet companies to supermarket chains.

M_3 OR BROAD MONEY: WHICH MEASURE TO USE?

Table 10.1 indicates the relative size of the components of the two definitions of the money supply as of June 1999. Economists may be in some disagreement about which definition of money, M_3 or broad money, is too 'broad' or 'narrow'. Figures on both measures are usually quoted in regularly published indicators of economic activity.

Which definition shall we adopt? In our analysis in this chapter and Chapter 11, we will employ the M_3 definition. This is partly because much of M_3 is directly and immediately useable as a medium of exchange, but mostly for simplicity's sake. Additionally, as shown in Table 10.1, M_3 constitutes over 83 per cent of the value of even our broadest definition of money (broad money).

However, it should be noted that the specific definition of money adopted is important for the purposes of monetary policy. For example, the money supply as measured by broad money might be constant, while money defined as M_3 might be increasing. Now, if the monetary authorities feel it is appropriate to have an expanding supply of money, acceptance of the M_3 definition would suggest that the desired expansion of the money supply is already taking place and that no specific policy action is required. But acceptance of the broad money definition would call for specific actions to increase currency and current deposits.

Figure 10.1 (over the page) shows both the level of each of our measures of the money supply and how they have grown since June 1957. Note that prior to the deregulation of the financial sector in the early 1980s, especially throughout the period 1965–66 to 1982–83, broad money grew at a faster rate than M_3. Following deregulation, the growth of M_3 has generally outstripped that of broad money, reflecting an improvement in the competitive position of the banks relative to the NBFIs.

QUALIFICATIONS

Two qualifications should be noted:

1 A technical qualification of our definition of M_3 must be added—currency and deposits owned by the government, the Reserve Bank of Australia and the banks are excluded. This exclusion is partly to avoid overstating the money supply and partly because money in the possession of households and businesses—that is, 'in circulation'—is more relevant to the level of spending in the economy.[7] It is also for this reason that currency held by the non-bank financial institutions is excluded from the definition of broad money.

2 Some components of M_3 and broad money are clearly less 'money-like' than are others. For example, term deposits cannot be used immediately as payment for goods and services. However, difficulties in isolating these forms of accounts and continued innovations in the financial sector have led to their inclusion in the two official measures of the money supply.

CREDIT CARDS

You may be curious about why credit cards have been ignored in our discussion of how money is defined. After all, credit cards are a convenient means of making purchases. The answer is that credit cards are not really money, but rather a means of obtaining a short-term loan from the bank or other financial institution that has issued the card. When you purchase, say, a car stereo with a credit card, the issuing bank reimburses the store. Then later you reimburse the bank. You are likely to pay an annual fee for the services provided and, if you choose to repay the bank in instalments, you will pay a sizeable interest charge. Credit cards are a means of deferring or postponing payment for a short period of time. Your purchase is not actually complete until you have paid your credit-card bill!

It is worth noting, however, that credit cards—and, indeed all other forms of credit—allow individuals and businesses to 'economise' in the use of money. Credit cards permit you to have less currency, fewer cheque account deposits and fewer debit account deposits on hand to negotiate transactions. Stated differently, credit cards facilitate the synchronisation of our expenditures and receipts of income, so reducing the cash, cheque, and debit card account deposits we must hold.

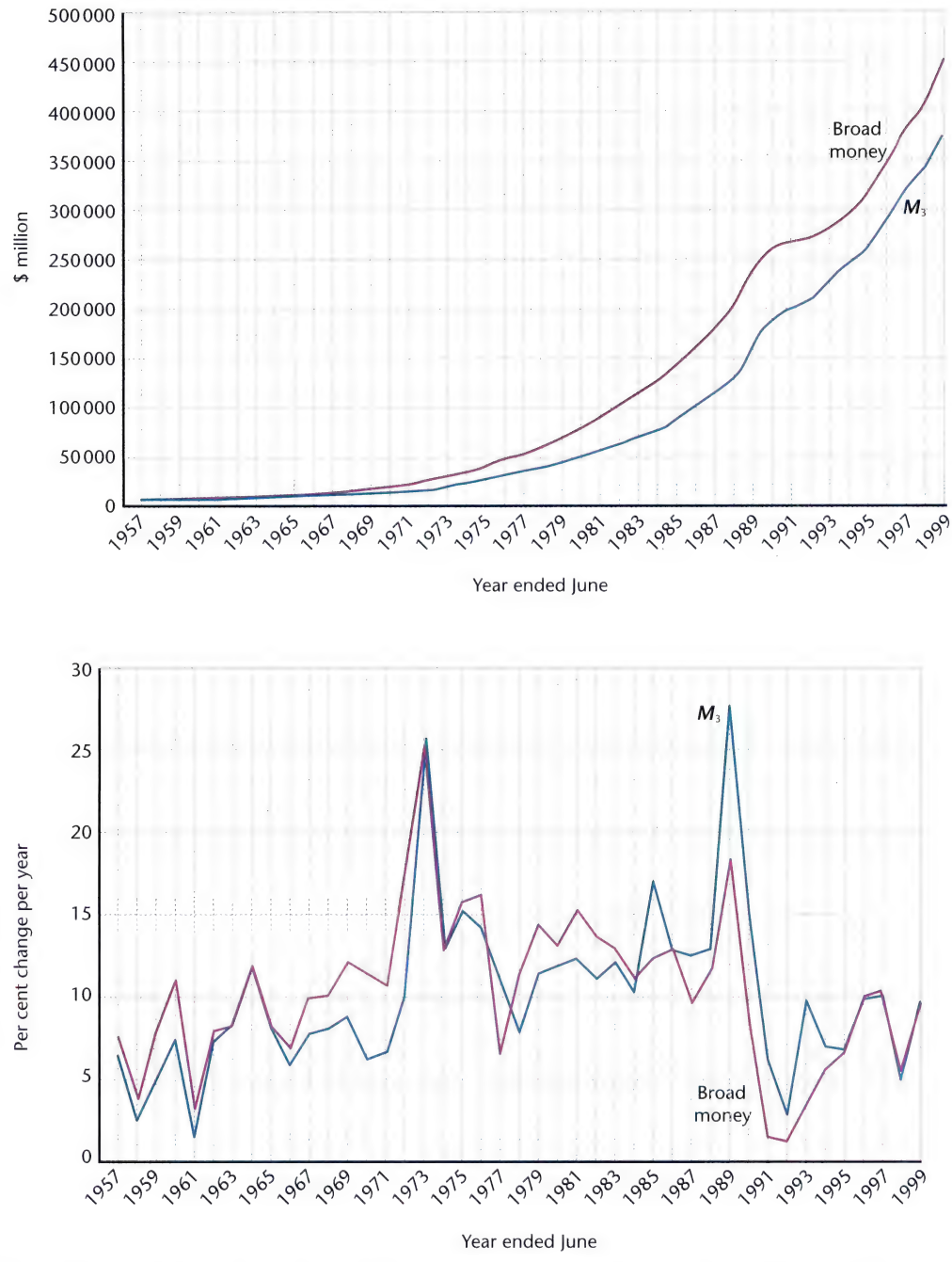


FIGURE 10.1
Money in Australia: the levels and growth rates of M_3 and broad money, 1956–57 to 1998–99

Note that while the broad money measure of the money supply is, by definition, larger than that of M_3, the 'growth rate' of the money supply depends upon which of the two definitions of the money supply is used.

SOURCE: 1956–57 to 1959–60, R. A. Foster & S. E. Stewart, Australian Economic Statistics 1949–50 to 1989–90, *Reserve Bank of Australia Occasional Paper No. 8, February 1991; 1960–61 to 1998–99, Reserve Bank of Australia,* Bulletin, *various issues.*

THE MONETARY BASE

Monetary base or high-powered money: the net *monetary* liabilities of the government to the non-bank public and the banks in the form of currency held by the public, currency held by the banks, and banks' demand deposits with the Reserve Bank of Australia.

One final definition of money that we will find most useful when we discuss monetary policy is that of the **monetary base**, sometimes referred to as high-powered money. The monetary base is essentially composed of the following:

1 currency held by the public

2 currency held by the banks

3 banks' demand deposits with the Reserve Bank of Australia.

Thus the monetary base represents net *monetary* liabilities of the government to the non-bank public and the banks and, as its name suggests, helps to form a base for the total level of money in our economy (as measured by M_3). At June 1999, the monetary base stood at a level of $31 752 million, or just under 8.5 per cent of the value of M_3.

Concept highlights

- Money is, basically, anything that is accepted as performing the functions of money. In Australia and other advanced economies, all money is essentially the debts of government and banks.
- There is no universally accepted measure of money. Credit cards, however, are simply a method for deferring payment, and are not, therefore, counted as money.
- In Australia, we have two official measures of money: M_3 and broad money.
- M_3 is equal to deposits with the banks (current and non-current deposits) *plus* currency (coins and notes) in circulation.
- Broad money is equal to M_3 *plus* the borrowings from the private sector of the non-bank financial institutions *less* their holdings of currency and bank deposits.
- Another useful concept related to the money supply is that of the monetary base, which is equal to currency held by the public and the banks *plus* banks' demand deposits held with the Reserve Bank of Australia.
- New technologies, in particular electronic funds transfer (EFT) technologies, have altered the definition of what constitutes money over time, and have become increasingly important in the transfer of funds between individuals and business.

Business IMPLICATION

SAVE MONEY WITH 'ELECTRONIC MONEY'

How can the new forms of electronic funds transfer available for making payments save money for businesses and consumers? Simply by reducing the amounts of notes and coins that each has to hold over any given period. For consumers this may mean fewer trips to the bank (or ATM), saving both time and travel costs. It may also mean greater peace of mind, if less cash is carried. For business, the savings come in the form of less handling of cash, easier tallying of the till, and fewer trips to the bank with fewer notes and coins to be deposited or withdrawn. Counting, handling and guarding cash costs money! If businesses can reduce the amounts of actual 'real money'—notes and coins—handled, and use more 'electronic money'—for example, EFTPOS—business costs can be lowered to the extent that the various handling costs are lowered.

Global SNAPSHOT — WORLD MARKET SHARE OF THE MAJOR CARD SUPPLIERS

Credit, debit and charge cards are often referred to as plastic money. In terms of the organisations issuing these cards, two stand out as leaders: Visa and MasterCard. Here we provide a breakdown of the world market share held by each brand name. The data are for 1995.

Credit, debit and charge card brand	Per cent of world market held (1995)
Visa	42.7
MasterCard	30.7
JCB	6.0
Discover	4.0
American Express	3.1
Diners Club	0.6
Others	12.9
Total	100.0

SOURCE: Euromonitor, *1999.*

Questions

1 In what senses are credit, debit and charge cards not really money? Explain, for each type of card, why it does not represent money.

2 Why might Visa and MasterCard have achieved such significant shares of the global card issuing market?

WHAT 'BACKS' THE MONEY SUPPLY?

This is a slippery question; any reasonably complete answer is likely to be at odds with the preconceptions many of us hold with respect to money.

MONEY AS DEBT

The first point to recognise is that the major components of the money supply—notes and deposits—are simply debts, or promises to pay. Notes are the circulating debt of the Reserve Bank. Deposits are the debts of the banks.

Further, notes and deposits have no **intrinsic value**. A $5 note, for example, is just a piece of plastic. A deposit is merely a bookkeeping entry. Coins, we already know, have an intrinsic value less than their face value. The government will not redeem the notes you hold for anything tangible, such as gold. In effect, we have wisely chosen to 'manage' our money supply in seeking to ensure that the amount of money needed for that particular volume of business activity that will encourage full employment, stability in the price level and a healthy rate of economic growth is available.

Many economists feel that such management of the money supply is much more sensible than linking the money supply to gold or any other commodity whose supply is subject to unpredictable change. After all, a substantial increase in the nation's gold stock as the result of mining might increase the money supply far beyond that amount needed to transact a full-employment level of business activity, and therefore might result in sharp inflation. Conversely, a decline in

domestic gold production or the loss of gold in settling international transactions could reduce the domestic money supply to the point where economic activity was choked off and unemployment and a retarded growth rate resulted. The important point is that an Australian note cannot be converted into gold, but is exchangeable only for other notes. The government will swap one $5 note for another bearing a different serial number. That is all you can obtain should you ask the government to redeem some of the notes you hold. Similarly, deposit money cannot be exchanged for gold, but only for currency, which, as we have just seen, will not be redeemed by the government for anything tangible.

VALUE OF MONEY

If currency and deposits have no intrinsic characteristics that give them value and if they are not backed by gold or other precious metals, then why are they money? A reasonably complete answer to this question involves three points.

ACCEPTABILITY

Currency and deposits are money for the simple reason that they are accepted and used as such. By virtue of long-standing business practice, currency and deposits perform the basic function of money—they are acceptable as a medium of exchange. Suppose you swap a $50 note for a shirt or blouse at a clothing store. Why does the seller accept this piece of paper in exchange for a product? The answer is curious—sellers accept currency because they are confident that others will also be willing to accept it in exchange for goods and services. Sellers know that they can use the currency to purchase the services of labour, acquire products from wholesalers, pay the rent on the store and so on.

Each of us accepts currency in exchange because we have confidence that it will be exchangeable for real goods and services when we choose to spend it.

LEGAL TENDER

Legal tender: an acceptable form of payment for debt owed.

Fiat money: money that draws its value from government decree, not through backing by precious metals or other valued commodities.

Our confidence in the acceptability of currency is partly a matter of law; currency has been designated as **legal tender** by government. This means that notes must be accepted in the payment of a debt, or the creditor forfeits the privilege of charging interest and the right to sue the debtor for non-payment. Put more bluntly, the acceptability of currency is bolstered by the fact that government says these dollars are money. The notes in our economy are basically **fiat money**; they are money because the government asserts it, not because of redeemability in terms of some precious metal. The general acceptability of currency is also bolstered by the willingness of government to accept it in the payment of taxes and other obligations owed to government.

Lest we be overimpressed by the power of government, it should be noted that the fact that notes are generally accepted in exchange is decidedly more important than government's legal tender decree in making these notes function as money. Indeed, the government has not decreed deposit transfers to be legal tender, but they nevertheless successfully perform the vast bulk of the economy's exchanges of goods, services and resources.

RELATIVE SCARCITY

At a more fundamental level, the value of money, like the economic value of anything else, is essentially a supply and demand phenomenon—that is, money derives its value from its scarcity relative to its usefulness. The usefulness of

money, of course, lies in its unique capacity to be exchanged for goods and services, either now or in the future. The economy's demand for money thus depends upon its total dollar volume of transactions in any given period, plus the amount of money individuals and businesses want to hold for possible future transactions. Given a reasonably constant demand for money, the value or 'purchasing power' of the monetary unit will be determined by the supply of money. Let us see why this is so.

MONEY AND PRICES

The real value or purchasing power of money is the amount of goods and services a unit of money will buy. It is obvious, furthermore, that the amount a dollar will buy varies inversely with the price level; stated differently, a reciprocal relationship exists between the general price level and the value of the dollar. Figure 10.2 allows us to visualise this inverse relationship. When the consumer price index or 'cost-of-living' index goes up, the purchasing power of the dollar necessarily goes down, and vice versa. Higher prices lower the value of the dollar because more dollars are now needed to command a given amount of goods and services. Conversely, lower prices increase the purchasing power of the dollar because you now need fewer dollars to obtain a given quantity of goods and services. If the price level doubles, the value of the dollar declines by one-half, or 50 per cent. If the price level falls by one-half, or 50 per cent, the purchasing power of the dollar doubles.[8]

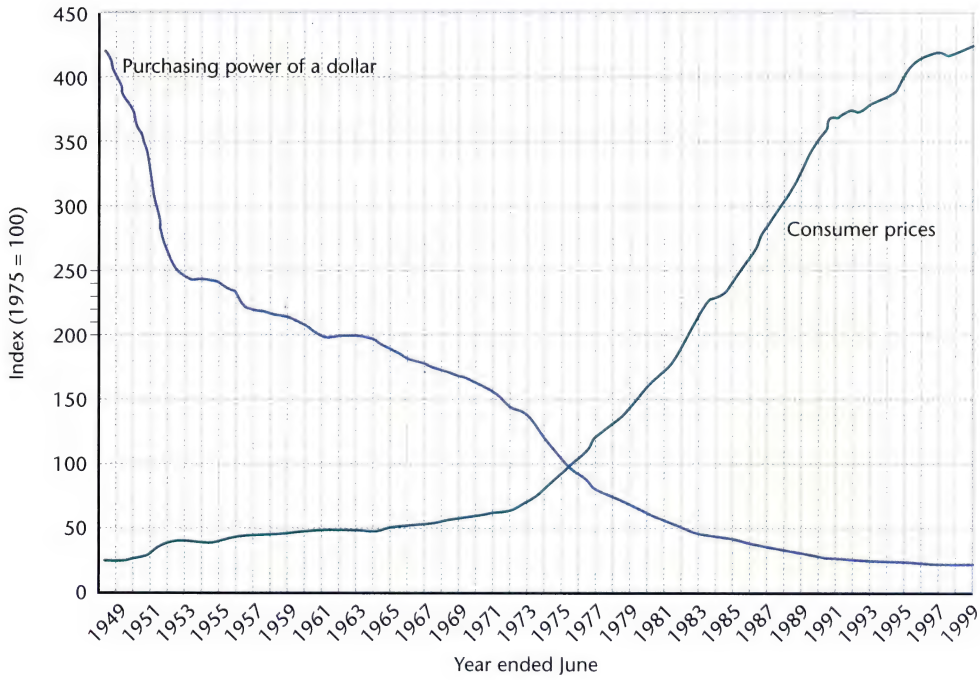


FIGURE 10.2
The price level and the value of money

A reciprocal or inverse relationship exists between the general price level and the purchasing power of the dollar.

SOURCE: Australian Bureau of Statistics, Consumer Price Index, *ABS Cat. No. 6401.0, various issues.*

You have probably heard or read of situations when a nation's currency became worthless and unacceptable in exchange. With few exceptions, these were situations where government issued so many notes that the value of each of these units of money was almost totally undermined. The infamous inflation

after World War I in Germany is a notable example. In December of 1919 there were about 50 000 million marks in circulation. Exactly four years later this figure had expanded to 496 585 345 billion marks! The result? The German mark in 1923 was worth an infinitesimal fraction of its 1919 value.[9] Inflation, you will recall, is typically the consequence of society's spending beyond its capacity to produce.

Other things being equal, increases in the money supply tend to increase total spending. Once full employment is reached and total output becomes virtually fixed, this added spending can only serve to make prices spiral up. The shirt that sold for $50 in our earlier illustration may, after severe inflation, cost $100. This means that the dollar, formerly worth one-fiftieth of a shirt, is now worth just one-hundredth of a shirt. The dollar's value, or its purchasing power, has obviously been reduced to 50 per cent of its former value by inflation.

How might inflation and the accompanying decreases in the value of the dollar affect the acceptability of notes as money? Households and businesses are willing to accept notes as a medium of exchange as long as they know it can in turn be spent by them without any noticeable loss in its purchasing power. But, with spiralling inflation, this is not the case. Runaway inflation, such as Germany faced in the early 1920s, may significantly depreciate the value of money between the time of its receipt and its expenditure. Money will be 'hot' money. It is as if the government were constantly taxing away the purchasing power of dollars. Rapid depreciation of the value of the dollar may cause it to cease functioning as a medium of exchange. Businesses and households may refuse to accept notes in exchange because they do not want to bear the loss in value that will occur while the notes are in their possession (all this despite the fact that government says the notes are legal tender!). Without an acceptable medium of exchange, the economy will revert to inefficient barter.

Similarly, people are willing to use money as a store of value as long as there is no unreasonable deterioration in the value of those stored dollars because of inflation. And the economy can effectually employ the monetary unit as a unit of account only when its purchasing power is relatively stable. A yardstick of value that is subject to drastic shrinkage no longer permits buyers and sellers to establish the terms of trade clearly. When the value of the dollar is declining rapidly, sellers do not know what to charge and buyers do not know what to pay for the various goods and services.

MANAGING MONEY

The overriding implication of this discussion of the value of money is this: the major 'backing' of Australian notes is the government's ability to keep the value of money reasonably stable. This entails:

1. appropriate fiscal policy, as explained in Chapter 9
2. intelligent management of monetary conditions, as noted above.

Businesses and households accept notes in exchange for goods and services as long as these command a roughly equivalent amount of goods and services when they in turn spend them. In our economy a blending of legislation, government policy and social practice serves to restrain any imprudent expansion of the money supply that might jeopardise money's value in exchange.

What we have said with respect to notes also applies to deposit money. In this case money is the debt of the banks. If you have an account worth $200, this merely means that your bank is indebted to you for that number of dollars. You can collect this debt in one of two ways. You can go to the bank and demand

currency for your deposit; this simply amounts to changing the debts you hold from bank debts to government-issued debts. Or, and this is more likely, you can 'collect' the debt that the bank owes you by transferring this claim either by cheque or electronic transfer to someone else. For example, if you buy a $200 suit, you could pay for it by writing a cheque, which transfers the bank's indebtedness from you to the store. Your bank now owes the store the $200 that it previously owed to you. Why does the store accept this transfer of indebtedness (the cheque) as a medium of exchange? Because it can convert it into currency on demand or can in turn transfer the debt to others in making purchases. Thus cheques, as a means of transferring bank debts, are acceptable as money because of the banks' ability to honour these claims.

In turn, the ability of banks to honour claims against them depends upon their not creating too many of these claims. We shall find in a moment that a completely decentralised system of private, profit-seeking banks does not contain sufficient safeguards against the creation of too much money. Hence, the Australian banking system has traditionally had a substantial amount of centralisation and governmental control to guard against the imprudent creation of money by banks.

Concept highlights

- In Australia and other developed nations money is backed by fiat. Thus the value of money is not anchored in carefully defined quantities of precious metals, but rather in the amount of goods and services money will purchase in the marketplace, and the fact that it is money by the decree of government.
- The debts of government and the banks will efficiently perform the functions of money as long as their value, or purchasing power, is relatively stable. This ensures acceptability of the monetary unit.
- Government's responsibility in stabilising the value of the monetary unit involves:
  - the application of appropriate fiscal policies
  - effective monetary management.

THE DEMAND FOR MONEY

Our emphasis so far has been on what constitutes the supply of money and how the money supply is 'backed'. We now turn to the demand for money. Our earlier discussion of the functions of money suggests two basic reasons why there is a demand for money; that is, why the public wants to hold money.

TRANSACTIONS DEMAND: D_t

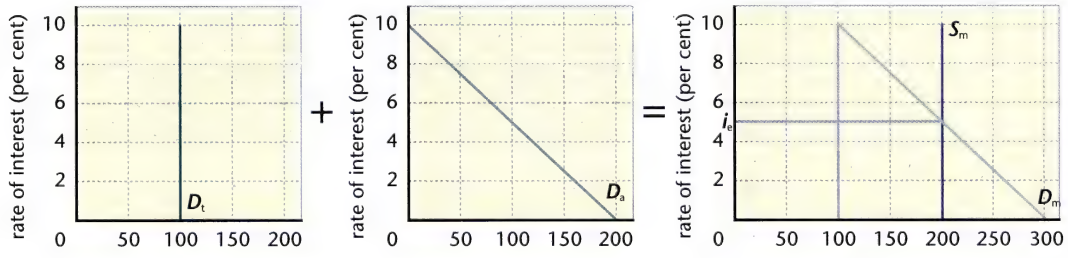
Transactions demand for money: the demand for money as a medium of exchange.

The first reason, of course, is that people want money as a medium of exchange—as a means of conveniently negotiating the purchase of goods and services. Households must have enough money on hand to buy groceries and to pay the mortgage and other bills until their next pay is received. Similarly, businesses need money to pay for labour, materials, power, and so on. Money demanded for these purposes is simply called the **transactions demand for money**.

Not surprisingly, the basic determinant of the amount of money demanded for transaction purposes is the level of money GDP. The larger the total money value of all goods and services exchanged in the economy, the larger will be the

amount of money needed to negotiate these transactions. The transactions demand for money varies directly with nominal GDP. Households and firms want more for transaction purposes if either prices rise or real output increases. In both instances there will be a larger dollar volume of transactions to negotiate.

In Figure 10.3(a) we have graphed the relationship between the transactions demand for money, D_t, and the interest rate. Because the transactions demand for money depends on the level of money GDP and is assumed to be independent of the interest rate, we show the transactions demand as a vertical line. The amount of money demanded for transactions is assumed, for simplicity, to be unrelated to changes in the rate of interest. Why have we located the transactions demand at $100 billion? While the specific choice of that amount is arbitrary, a rationale can be easily provided. For example, if each dollar held for transactions purposes is spent on the average three times per year and money GDP is assumed to be $300 billion, then the public would obviously need $100 billion of money to purchase that GDP.



a. Transactions demand b. Asset demand c. Total demand

FIGURE 10.3
The demand for money and the money market

The total demand for money, D_m, is determined by horizontally adding the asset demand for money D_a to the transactions demand D_t. The transactions demand is vertical because it depends upon nominal GDP rather than the interest rates available on financial assets. The asset demand varies inversely with the interest rate because of the opportunity cost of holding money (M_3) instead of bonds—the interest income forgone. Combining the money supply (stock), S_m, with total money demand, D_m, portrays the money market and determines the equilibrium interest rate i_e.

ASSET DEMAND: D_a

Asset demand for money: the demand for money as a financial asset and store of wealth.

People may hold their financial assets in a variety of forms, such as company shares, private or government bonds, or as M_3. Hence, there is an **asset demand for money**.

What determines the asset demand for money? To find an answer, we must first recognise that each of the various forms in which our financial assets may be held has associated advantages and disadvantages. To simplify, let us compare holding bonds with holding money as an asset. The advantage of holding money is its liquidity; money is the most liquid of all assets in that it is immediately (or rapidly) available for the making of purchases. Money is an especially attractive asset to be holding when the prices of goods, services and other financial assets are expected to decline. When the price of a bond falls, the holder will suffer a loss if the bond must be sold before maturity.

The disadvantage of holding money as an asset, in comparison to holding bonds, is that we do not earn as much interest income from the average bank

deposit as we do on bonds. Currency holdings—that constitute only a small portion of what we have defined as money, about 6 per cent of M_3—obviously earn no interest at all; some chequing accounts also pay little or no interest; bank charges and fees on other types of deposit account may effectively reduce the interest rate to zero. The problem, then, is to decide how much of our financial assets to hold as, say, bonds and how much as money.

The solution depends primarily on the difference between the rate of interest paid on bonds and the rate of interest earned on deposits with banks—an interest rate differential. Think of it this way—by holding money, a household or business incurs an opportunity cost (see Chapter 2); that is, by holding money we forgo or sacrifice the additional interest income available from holding bonds. Putting it simply, if a bond pays 5 per cent more interest than a deposit account, then it costs you $5 per year of forgone interest income to hold $100 in a deposit account with the banks.

Figure 10.4 provides an indication of the size of this opportunity cost in Australia over the last decade. In this case we are comparing the interest rate on five-year Treasury bonds with that available on the average deposit (transactions and investment) account with the banks. In many cases the interest rate differential—the interest rate forgone by holding money instead of bonds—has been substantial. Note that the interest differential has always been positive. Also note that as the rate of interest on bonds rises, the interest differential rises.

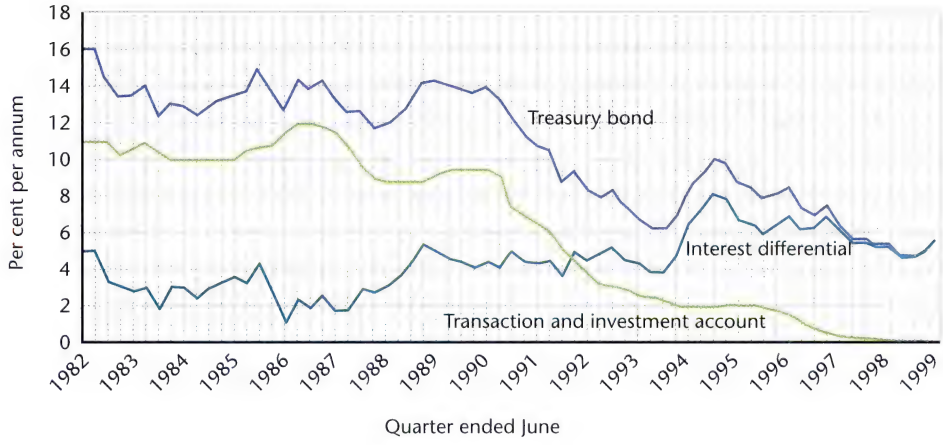


FIGURE 10.4
The interest rate differential between bonds and deposit accounts in Australia, 1981–82 to 1998–99

The interest rate forgone by holding money in the form of a bank deposit, in this case a transaction and investment account, rather than as bonds, has often been substantial. In some periods the interest forgone has been as high as 8.2 per cent.

SOURCE: Reserve Bank of Australia, Bulletin, *various issues.*

It is no surprise that the asset demand for money varies inversely with the interest rate payable on bonds. When the opportunity cost of holding money as an asset is low, the public will choose to hold a large amount of money as assets. Conversely, when the rate of interest forgone is large, it is costly to be 'liquid', and the amount of assets held in the form of money will be small. Stated differently, when it is 'expensive' to hold money as an asset, people will hold less of it; when money can be held 'cheaply', people will hold more of it.

Of course, there are, in reality, many interest rates (we shall examine some of these further in Chapter 12), many different forms of financial assets, and many interest differentials. This statement holds true even if we are just looking at the variety of bonds and bank deposits available. The main point is that there is an interest penalty—an opportunity cost—incurred if money is held in bank deposits as opposed to bonds. Thus, for simplicity, we can assume that the interest rate paid on money balances—currency plus deposits with the banks—

is zero. The inverse relationship between the interest rate—the rate of interest paid on bonds—and the amount of money people will want to hold as an asset is shown by D_a in Figure 10.3(b).

TOTAL MONEY DEMAND: D_m

As shown in Figure 10.3(c), the **total demand for money**, D_m, can be found by adding the asset demand horizontally to the transactions demand. The vertical line in Figure 10.3(c) represents the transactions demand to which the asset demand of Figure 10.3(b) has been added. The resulting down-sloping line represents the total amount of money the public will want to hold for transactions and as an asset at each possible level of the interest rate. Further, note that a change in nominal GDP—working through the transactions demand for money—will cause the total money demand curve to shift. Specifically, an increase in nominal GDP will mean that the public will want to hold a larger amount of money for transactions purposes and this will shift the total money demand curve to the right. For example, if nominal GDP increases from $300 to $450 billion and we continue to suppose that the average dollar held for transactions is spent three times per year, then the transactions demand line will shift from $100 to $150 billion. As a result, the total money demand curve will lie $50 billion further to the right at each possible interest rate than was formerly the case. Conversely, a decline in nominal GDP will shift the total money demand curve to the left.

THE MONEY MARKET

At the risk of getting ahead of ourselves, we can combine the demand for money with the supply of money to portray a simplified **money market** in which to determine the equilibrium interest rate. Hence, in Figure 10.3(c) we have drawn a vertical line, S_m, to represent the money supply. The money supply is shown as a vertical line, on the simplifying assumption that our monetary authorities and financial institutions have provided the economy with some particular stock of money, such as the M_3 total shown in Table 10.1.

Note that our representation of the money-supply curve as a vertical line is not an uncontentious issue. Several valid alternatives to this presentation exist. These include an up-sloping money-supply curve, reflecting the ability of banks to increase the quantity of money that they supply—within certain limits (see Chapter 11)—as interest rates increase. Another alternative would be to have the money-supply curve horizontal, with the rate of interest being determined by the monetary authority, and the supply of money being determined endogenously by the banks. Some of these issues are discussed further in Chapter 13. As we will find in Chapter 12, however, we will have to use a number of these possibilities to explain the operation of monetary policy and its impact on the economy.

Just as in a product or resource market (see Chapter 3), the intersection of money demand and money supply determines the equilibrium price. The 'price' in this case is the equilibrium interest rate—that is, the interest rate paid on bonds—which represents the opportunity cost of holding money balances.

What if a disequilibrium existed in the money market? How would the money market achieve equilibrium? For example, what if the supply of money were reduced to $150 billion so that the quantity of money demanded exceeded the quantity supplied at the original equilibrium interest rate of 5 per cent? In this case the interest rate would rise to about 7.5 per cent. This means that the opportunity cost of holding money increases so that firms and households reduce the amount of currency and deposits they hold from $200 to $150 billion.

How does this occur? The initial shortage of money at the original interest rate leads individuals to reduce their holdings of their alternative financial asset—bonds—so as to obtain a greater quantity of money. However, this drives down the price of bonds, increasing the yield—the interest rate—on these assets until the new equilibrium interest rate of 7.5 per cent is achieved.

Conversely, an increase in the supply of money to, say, $250 billion causes the quantity of money supplied to exceed the quantity demanded at the initial interest rate of 5 per cent. In this case, the interest rate falls to a new equilibrium at approximately 2 per cent. Because the opportunity cost of holding money is low—being liquid is inexpensive—consumers and businesses increase the amount of currency and deposits they hold from $200 to $250 billion. In Chapter 12 we will discover how monetary policy can attempt to change the equilibrium interest rate. A higher/lower interest rate will reduce/increase investment and consumption spending and ultimately alter the levels of real output, employment and prices.

Concept highlights

- The total demand for money comprises the transactions demand and asset demand for money.
- The transactions demand reflects the needs for money by households and businesses as a medium of exchange. The transactions demand for money varies directly with nominal GDP, reflecting both the number and average value of transactions conducted throughout the economy.
- The asset demand for money constitutes the demand by households and businesses to hold their wealth in a highly liquid form, rather than in alternative assets. The asset demand varies inversely with the interest rate on bonds, which represents the opportunity cost of holding money, in terms of the interest income forgone.
- We may combine the total demand for money with the money-supply curve to represent the money market. Under the assumption that the money-supply curve is vertical or up-sloping, the equilibrium interest rate is determined at the point where the total demand for money equates to the supply of money.
- The nature of the money-supply curve is a controversial issue among economists, many of whom hold alternative viewpoints.

INSTITUTIONAL FRAMEWORK OF THE AUSTRALIAN FINANCIAL SYSTEM

We have noted that the major component of the money supply—bank deposits—is created by banks and that government-created money—currency—typically comes into circulation through the banks. It is essential, then, that we look at the framework of the Australian financial system prior to a detailed analysis in Chapter 11 of how banks create money. It should be noted that since the mid-1980s the Australian financial system has been in a state of institutional and operational flux. Bank mergers, deregulation and the entry and exit of foreign banks have changed the overall structure of the financial system.

BANKING IN AUSTRALIA

In early colonial days barter was commonly used in Australia. In addition, use was made of British coin and other currencies, including Spanish dollars.

In 1817 the first private trading bank was established in New South Wales, and two years later the first savings bank.[10] From that time there was a steady growth in the number of banks, and there were almost 30 towards the end of the century. These early banks developed on a branch basis—each bank operated a number of branches locally and further afield. At that time British currency was still in common use, although many of the private banks issued their own notes. However, a major disruption to this note issue occurred in the crisis of 1893, when many of the private banks ceased operation and some actually failed.

In 1910 (nine years after Federation), the *Australian Notes Act* led to the Treasury becoming the single note-issuing authority. The currency system adopted was similar to that of the British; Australian pound and ten shilling notes were issued, and shillings, pence and other coins minted. Up until 1920, the Australian notes were directly convertible into gold. By 1924, the authority of note issue was transferred to the government-operated Commonwealth Bank. This action effectively laid a foundation for central bank activity in Australia. In 1966 a new Australian currency was introduced, consisting of Australian dollars and cents—the new dollar being equivalent to 10 shillings.

Asian FOCUS — LENDING RATES IN ASIA

Average lending rates for businesses and consumers vary widely across the region. This affects both the cost of doing business and the desire to borrow for investment and consumption purposes.

Country	Lending rate (% p.a.)
Australia	8.04
Japan	2.32
New Zealand	11.22
China, mainland	6.39
China, Hong Kong SAR	9.00
India	13.54
Indonesia	32.15
Korea	15.30
Malaysia	10.61
Philippines	16.78
Singapore	7.44
Thailand	14.42

SOURCE: International Monetary Fund, International Financial Statistics, *December 1999.*

Questions

1. What are the implications of high interest rates in countries such as Indonesia and the Philippines for both investment and consumption spending? What are the longer-term implications for economic growth if interest rates are kept high?
2. Will low interest rates in countries such as Japan guarantee high levels of investment and consumer spending? Why or why not?
3. What factors may explain differences that are present in interest rates across the region? List and discuss at least three of these factors and rank their importance.

THE BANKS

The nineteenth century had witnessed a growth in the number of banks and in competition between them. In the twentieth century the number of banks was gradually reduced as a result of both amalgamation and takeovers. By 1987 there were four major banks in Australia, operating throughout Australia by a branch system[11]—the ANZ, Commonwealth Bank of Australia (CBA), National Australia Bank (NAB) and Westpac.

Since there are relatively few major banks, the banking system could be classified as oligopolistic.[12] Prices (interest rates) charged by the banks on different kinds of loans are usually similar and tend to move together. Charges for accounts and other services are also similar for different banks. The banks tend to compete on the advertised basis of quality of service, presentation, travel services and so on.

The modern bank offers a wide range of services, or functions, to its clients. The banks accept money on deposit and make loans via overdrafts or special loan accounts. Payments across Australia are facilitated by means of cheque issue and collection and EFT. Overseas payments or receipts are also accomplished via the banks' ability to exchange currencies.

In Chapter 11 we will show that by making loans to the public, the banks may increase the economy's supply of money.

FINANCIAL INTERMEDIARIES

All banking and financial institutions have one point in common—they are all dealers in credit or debt. These individual institutions lend the funds deposited with them or acquired by them, receiving credit instruments—bonds, mortgages, or promissory notes—in return. Hence, these institutions play a significant role in the economy, functioning as **financial intermediaries** between savers and investors.

Although the present analysis will be concerned almost exclusively with the banks, it is important to recognise that the banking system in Australia is thoroughly supplemented by a diverse group of specialised banking and financial institutions. Tables 10.2 and 10.3 provide an indication of the diversity of these institutions in the Australian financial system and their relative importance during the 1960–61 to 1998–99 period. In particular, Table 10.2 details the level and growth in assets held by Australia's financial institutions during the period 1960–61 to 1998–99, while Table 10.3 shows the share of total assets held by each type of financial institution over this period.

The deregulation of the financial system undertaken during the 1980s and 1990s has strengthened the banks' position in the financial sector in both an absolute and a relative sense. Financial deregulation allowed the banks to regain much of the share of total assets in the financial system lost to the non-bank financial institutions throughout the late 1960s and the 1970s. Additionally, we should note the importance of the banking system in the financial sector. By 1998–99, the banks held around 49 per cent of all assets of the Australian financial sector. This is notwithstanding the fast growth of securitisation vehicles, especially in the area of home mortgages.

Table 10.2 Assets of institutions in the Australian financial sector, 1960–61 to 1998–99 (billions of dollars)

	1960–1961	1965–1966	1970–1971	1975–1976	1980–1981	1985–1986	1990–1991	1995–1996	1998–1999
Reserve Bank of Australia (RBA)	2.2	2.3	3.7	6.2	11.9	24.0	29.0	36.0	49.0
Banks (excluding RBA)	*7.3*	*11.3*	*17.3*	*37.1*	*66.6*	*154.3*	*353.7*	*486.6*	*648.8*
Non-bank financial institutions (NBFIs)									
Permanent building societies	0.5	0.3	1.4	5.1	12.2	20.1	21.9	13.1	12.7
Credit cooperatives	0.0	0.0	0.2	0.8	2.3	6.6	9.0	15.6	20.0
Authorised money market dealers	0.2	0.4	0.8	1.1	1.8	2.1	4.1	4.1	—
Money market corporations	0.0	0.1	1.0	3.0	8.7	30.9	48.4	59.9	60.9
Pastoral finance companies	0.4	0.5	0.7	0.9	1.3	5.3	1.9	2.9	4.0
Finance companies	1.3	1.7	4.1	10.9	21.8	29.6	35.8	34.7	47.2
General financiers	—	0.1	0.2	0.9	2.4	5.6	11.9	11.4	18.3
Total: Non-bank financial institutions (NBFIs)	*2.5*	*3.1*	*8.3*	*22.6*	*50.5*	*100.1*	*132.9*	*141.6*	*163.1*
Managed funds									
Life offices	2.1	3.4	5.9	9.5	15.5	32.1	92.7	126.1	161.9
Superannuation funds	1.3	2.2	3.7	6.9	14.5	41.8	86.0	152.0	230.1
Cash management trusts	—	—	—	—	0.2	3.3	5.8	7.0	21.4
Common funds	—	—	—	—	0.6	3.1	6.7	4.6	7.6
Public unit trusts	0.1	0.1	0.1	0.2	0.3	2.1	8.3	7.8	6.4
Friendly societies	0.2	0.2	0.3	0.4	1.8	10.7	25.8	48.5	93.0
Total: Managed funds	*3.6*	*6.0*	*10.0*	*17.0*	*32.7*	*93.1*	*225.3*	*346.0*	*520.4*
Total assets: Total banks, NBFIs and managed funds	***13.4***	***20.5***	***35.6***	***76.7***	***149.9***	***347.5***	***711.9***	***974.2***	***1332.3***
General insurance offices	0.6	1.2	2.0	4.4	9.7	18.6	36.0	56.8	83.0
Cooperative housing societies	—	0.6	0.7	1.0	1.5	1.9	2.7	1.6	[a]
Securitisation vehicles	—	—	—	—	—	—	8.2	14.5	45.1
Other financial institutions[b]	—	0.0	0.0	0.3	1.2	5.0	20.2	7.2	6.6

a Not available at time of preparation.
b Includes intra-group financiers and other financial corporations.

SOURCE: Reserve Bank of Australia, Australian Economic Statistics 1949–50 to 1994–95, *and Reserve Bank of Australia,* Bulletin, *various issues.*

THE RESERVE BANK OF AUSTRALIA (RBA)

The varied functions of a central bank are an important prerequisite to an efficient banking system. The growth of central banking activity in Australia dates from 1924 when, as already mentioned, note-issuing authority was vested in the Commonwealth Bank. The Commonwealth Bank was in fact a government-operated bank from the time of its establishment in 1911.

In the depression of the 1930s the Commonwealth Bank's importance grew as it was made responsible for maintaining exchange rates. World War II saw further central bank activities undertaken by the Commonwealth Bank. Wartime powers of the bank included the control of overseas transactions and supervisory power over

the private banks. At the end of the war the *Banking Act 1945* established the Commonwealth Bank as a fully fledged central bank. In 1959–60 the bank functions of the Commonwealth Bank were separated from its central bank functions and the latter were transferred to the newly created **Reserve Bank of Australia (RBA)**.

The *Reserve Bank Act 1959* lays down the general responsibility of the Reserve Bank:

> *It is the duty of the Board within the limits of its powers, to ensure that the monetary and banking policy of the bank is directed to the greatest advantage of the people of Australia and that the powers of the bank under this Act, the* Reserve Bank Act 1959 *and the regulations under that Act, are exercised in such a manner as in the opinion of the Board will best contribute to:*
> *(a) the stability of the currency of Australia;*
> *(b) the maintenance of full employment in Australia;*
> *(c) the economic prosperity and welfare of the people of Australia.*

The *Reserve Bank Act* also details the specific responsibilities of the Reserve Bank and requires that the Board keep the government fully informed about the Bank's actions and policies. The Act also makes provisions for possible disagreement arising between the Reserve Bank and the government, in which case final responsibility for decision rests with the federal government itself.

Table 10.3 Share of total assets of banks, NBFIs and managed funds, 1960–61 to 1998–99 (%)

	1960–1961	1965–1966	1970–1971	1975–1976	1980–1981	1985–1986	1990–1991	1995–1996	1998–1999
Banks (excluding RBA)	*54.5*	*55.1*	*48.6*	*48.4*	*44.4*	*44.4*	*49.7*	*49.9*	*48.7*
Non-bank financial institutions (NBFIs)									
Permanent building societies	3.7	1.5	3.9	6.6	8.1	5.8	3.1	1.3	1.0
Credit cooperatives	0.1	0.2	0.5	1.1	1.6	1.9	1.3	1.6	1.5
Authorised money market dealers	1.5	2.0	2.2	1.4	1.2	0.6	0.6	0.4	0.0
Money market corporations	0.0	0.5	2.8	3.9	5.8	8.9	6.8	6.1	4.6
Pastoral finance companies	3.1	2.5	1.8	1.1	0.9	1.5	0.3	0.3	0.3
Finance companies	9.7	8.3	11.5	14.2	14.5	8.5	5.0	3.6	3.5
General financiers	0.0	0.4	0.6	1.1	1.6	1.6	1.7	1.2	1.4
Total: Non-bank financial institutions (NBFIs)	*18.7*	*15.1*	*23.3*	*29.5*	*33.7*	*28.8*	*18.7*	*14.5*	*12.2*
Managed funds									
Life offices	15.7	16.6	16.6	12.4	10.3	9.2	13.0	12.9	12.2
Superannuation funds	9.7	10.7	10.4	9.0	9.7	12.0	12.1	15.6	17.3
Cash management trusts					0.1	1.0	0.8	0.7	1.6
Common funds					0.4	0.9	0.9	0.5	0.6
Public unit trusts	0.5	0.5	0.4	0.3	0.2	0.6	1.2	0.8	0.5
Friendly societies	1.3	1.1	0.8	0.6	1.2	3.1	3.6	5.0	7.0
Total: Managed funds	*26.9*	*29.3*	*28.1*	*22.2*	*21.8*	*26.8*	*31.6*	*35.5*	*39.1*
Total assets: Total banks, NBFIs, and managed funds	***100.0***	***100.0***	***100.0***	***100.0***	***100.0***	***100.0***	***100.0***	***100.0***	***100.0***

SOURCE: Derived from Table 10.2.

FUNCTIONS OF THE RESERVE BANK

The Reserve Bank of Australia is responsible for general monetary management. This was traditionally achieved by setting a target level for the money supply, although monetary management has become more complex than this in recent times. This important management function will be discussed later in this chapter and taken up in more detail in Chapters 11 and 12. First we will examine some of the other important functions of the Reserve Bank.

Control of note issue

As we have already seen, the Reserve Bank is responsible for the issue of notes and must therefore judge what is an appropriate volume of notes for circulation at any time. This volume tends to increase over the years, as the population increases and inflation occurs. The volume also varies seasonally over a given year, particularly around Christmas time, when the total spending of the community first increases and then declines.

Banker to the banks

Exchange settlement accounts: accounts kept by banks with the Reserve Bank to settle debts owing to other banks that arise as a result of the exchange of cheques, and to provide funds on which to draw additional notes and coin.

In one sense the relationship between the Reserve Bank and the banks is just like that between a bank and its own private clients. The banks keep **exchange settlement accounts** with the Reserve Bank. These accounts are used in two ways:

1. to settle debts owing to other banks that usually arise as a result of the exchange of cheques
2. to meet a need for additional notes and coin that may be drawn on their accounts with the Reserve Bank.

Because these accounts accrue a low rate of interest—on average 0.25 per cent below the Reserve Bank's target for the cash rate—banks tend to minimise the balances held in these accounts.

If the banks find themselves particularly short on liquid assets, they have the facility of dealing in short-dated Commonwealth government securities and repurchase agreements (repos) to adjust their liquidity positions. All banks are members of the Reserve Bank Information and Transfer System (RITS), and may settle accounts on a real-time gross settlement (RTGS) basis with the Reserve Bank and other members of the system. We will examine these issues in more detail in Chapter 12.

Banker to government

The Reserve Bank acts as banker for the federal government. The federal government collects huge sums through taxation, spends equally astronomical amounts, and sells and redeems bonds. Naturally, the government wants to avail itself of banking facilities in carrying out these functions. Hence, the bankers' bank holds the Treasury's cheque accounts and administers the sale and redemption of government bonds. The Reserve Bank may also play a vital role in financing government deficits.

Management of the international means of payment

The Reserve Bank has acted as a custodian of Australian holdings of foreign exchange and, until the floating of the Australian dollar, directly implemented policy on the fixing of exchange rates. If an Australian citizen or company acquires foreign currency, it is usually deposited with a bank; the bank may then

sell the currency to the Reserve Bank, which credits the bank with the Australian equivalent, or hold it for its own purposes—for example, to sell to customers or speculate on the foreign exchange markets. The Reserve Bank will intervene in the foreign exchange market, either buying or selling Australian dollars, to reduce the level of volatility in the level of the exchange rate.

Implementation of monetary policy

The major measure available to the RBA in the implementation of monetary policy is open-market operations (the buying and selling of government securities). It is through this market-oriented measure that the Reserve Bank authorities can attempt to change monetary conditions—in terms of short-run stability and long-run economic growth. Whereas all the other functions are of a more or less routine or service nature, the goal of correctly managing monetary conditions entails the making of basic and unique policy decisions of a non-routine character. Chapter 12 discusses Reserve Bank monetary policy and its effectiveness in achieving economic stability, as well as the effects of deregulation of the financial system.

Other functions

The *Payment Systems (Regulation) Act 1998* granted the Reserve Bank extensive powers to direct developments in the payments system when it is judged to be in the public interest. These powers, exercised through the Payments System Board, mean that the Reserve Bank can designate a payments system, making it subject to direct regulation, and impose access rules or determine operating standards for participants in the system.

The Reserve Bank has two representatives on the board of the **Australian Prudential Regulation Authority (APRA)**, the institution responsible for ensuring that prudential standards are met across the financial system in Australia. This gives the Reserve Bank an indirect influence over prudential standards in the financial system, including those for banks. The Reserve Bank and APRA have a signed Memorandum of Understanding, covering such matters as information sharing and arrangements for dealing with financial crises. Cooperation between the Reserve Bank and APRA is also assisted by their membership of the Council of Financial Regulators, along with the Australian Securities and Investments Commission (ASIC). This allows a wide-ranging discussion of regulatory issues and a means of achieving greater consistency across different areas.



Concept highlights

- The financial system is composed of the Reserve Bank, the banks, and other financial intermediaries.
- The banks perform the tasks of accepting money deposits, making loans and providing cheque-paying and other account-transfer facilities. By lending, the banks create deposits, and are therefore money-creating institutions.
- The category of other financial intermediaries consists of a diverse range of non-bank financial institutions (NBFIs) and managed funds. The largest single component of this last group is that of superannuation funds.

- The major functions of the Reserve Bank are:
  - to supply the economy's need for coins and notes
  - to act as banker to the banks
  - to act as banker to the federal government
  - to manage the international means of payment
  - to direct monetary management in terms of the interests of the economy as a whole.
- In addition to its major functions, the roles of the Reserve Bank of Australia include:
  - extensive powers to influence the payments system
  - membership of the Council of Financial Regulators
  - membership of the board of the Australian Prudential Regulation Authority (APRA), which determines prudential standards within Australia's financial system.

SUMMARY

1 Anything is money that functions as (a) a medium of exchange; (b) a standard of value; (c) a store of value.

2 As a medium of exchange, money is used to conduct most transactions that involve economic exchange between individuals, government and businesses. By being universally accepted in this role, it facilitates these exchanges, removing the need for barter.

3 In its role as a unit of account, money provides a convenient common denominator for the statement of the price of the heterogeneous range of goods and services purchased and sold in society. Money thus removes the need to establish sets of exchange ratios for each product against other products. Money also serves as a unit of account for transactions involving future payments.

4 Because money is the most liquid of all assets, it provides a very convenient form in which to store value or wealth, although this is usually at the cost of generating a lower return.

5 There is no universally accepted measure of money. In Australia and other advanced economies, all money is essentially the debts of government and banks. New technologies, in particular electronic funds transfer (EFT) technologies, have altered the definition of what constitutes money over time, and have become increasingly important in the transfer of funds between individuals and business.

6 In Australia there are two officially accepted measures of what constitutes money. The first is deposits with the banks *plus* currency (coins and notes) in circulation. This is the M_3 measure of the money supply. 'Broad money' is M_3 *plus* the borrowings from the private sector of the non-bank financial institutions *less* their holdings of currency and bank deposits. Credit cards, being a method for deferring payment only, are not counted as money.

7 The monetary base, also referred to as high-powered money, is equal to currency held by the public and the banks *plus* banks' demand deposits held with the Reserve Bank of Australia.

8 In Australia and other developed nations, money is backed by fiat. Thus the value of money is not anchored in carefully defined quantities of precious

metals, but rather in the amount of goods and services money will purchase in the marketplace, and the fact that it is money by the decree of government.

9 The debts of government and the banks will efficiently perform the functions of money only as long as their value, or purchasing power, is relatively stable. Excessive inflation, often associated with the printing of money by government, erodes its value. Government's responsibility in stabilising the value of the monetary unit involves the application of appropriate fiscal policies, and effective monetary management. This ensures the general acceptance of fiat money as legal tender.

10 The total demand for money comprises the transactions demand and asset demand for money. The transactions demand varies directly with money or nominal GDP, reflecting changes in the value and volume of the transactions that represent economic activity. The asset demand varies inversely with the interest rate on bonds (and other return-generating assets), reflecting changes in the opportunity cost of holding wealth in highly liquid form.

11 The money-supply curve may take a number of forms: vertical, horizontal, or up-sloping. The particular form presumed depends largely on the school of thought to which the economist belongs. Under the assumption that the money-supply curve is vertical or up-sloping, it combines with the demand for money to represent the money market and determines the equilibrium interest rate.

12 The financial system is composed of the Reserve Bank, the banks, and other financial intermediaries.

13 The banks represent the largest single group in the financial system (by size of assets). They perform the tasks of accepting money deposits, making loans and providing cheque-paying and other account-transfer facilities. By lending, the banks create deposits, and are therefore money-creating institutions. Deregulation of the financial system over the 1980s and 1990s has allowed the banks to gain in relative importance in the financial system.

14 The category of other financial intermediaries consists of a diverse range of non-bank financial institutions (NBFIs) and managed funds. The largest single component of this last group is that of superannuation funds. Tables 10.2 and 10.3 provide a useful summary of the size and importance of institutions in Australia's financial system.

15 The major functions of the Reserve Bank are:
- to supply the economy's need for coins and notes
- to act as banker to the banks, providing exchange settlement account (ESA) facilities
- to act as banker to the federal government, handling both Treasury's cheque accounts and sales and purchases of bonds for the government
- to manage the international means of payment, including intervention in the foreign exchange market
- to direct monetary management in terms of the interests of the economy as a whole. This function is performed through its use of open-market operations (the sale and purchase of Commonwealth government securities).

16 Other roles of the Reserve Bank include:
- extensive powers to influence the payments system
- membership of the Council of Financial Regulators
- membership of the board of the Australian Prudential Regulation Authority (APRA), which determines prudential standards within Australia's financial system.

KEY TERMS *and* CONCEPTS *to remember*



asset, demand for money	349	monetary base	343
Australian Prudential Regulation Authority (APRA)	358	money market	351
broad money	340	non-bank financial institutions (NBFIs)	340
currency (coins and notes)	338	non-current deposits	339
current deposits	338	Reserve Bank of Australia (RBA)	356
exchange settlement accounts	357	store of value	336
fiat money	345	token money	338
financial intermediaries	354	total demand for money	351
intrinsic value	344	transactions demand for money	348
legal tender	345	unit of account	336
M_3	337		
medium of exchange	336		

QUESTIONS *and* STUDY SUGGESTIONS



Discussion & review

1. What are the three major functions of money? Describe how drastic inflation can undermine the ability of money to perform these three basic functions.
2. What items constitute the money supply in Australia? What is the most important component of the money supply?
3. Why is the face value of a coin greater than its intrinsic value? Explain.
4. What are the disadvantages of commodity money? What are the advantages of notes and of cheque and debit account money compared with commodity money?
5. Distinguish between M_3 and broad money. Why is this distinction likely to be of importance to your assessment of the rate of growth in the 'money' supply? Explain.
6. 'In most modern industrial economies of the world the debts of government and of banks are used as money.' Explain.
7. What 'backs' the money supply in Australia? What determines the value of money? Who is responsible for maintaining the value of money? Why is it important for the money supply to be capable of increasing or decreasing in size?
8. What is the basic determinant of (a) the transactions demand for money? (b) the asset demand for money?
9. What are the basic functions of banks? How do banks differ from other financial intermediaries?
10. State and briefly discuss the major functions of the Reserve Bank. What other responsibilities does the Reserve Bank hold?

Problems & exercises

1 Explain how the transactions demand and asset demand might be combined graphically to determine total money demand.

2 Assume an up-sloping or vertical money-supply curve. How is the equilibrium interest rate determined in the money market? How will disequilibria—excess demand or excess supply—in the money market be solved? Use graphs to explain.

3 What will happen to the equilibrium interest rate if the level of money GDP falls? What will happen to the equilibrium interest rate if the opportunity cost of holding money rises for all levels of money holding? Use graphs to illustrate your answers.

4 What implications does a horizontal money-supply curve have for the impact of the demand for money on interest rates? Explain. Graph this situation.

Application & analysis

1 'Money is only a bit of paper or a bit of metal that gives its owner a lawful claim to so much bread or beer or diamonds or motorcars or what not. We cannot eat money, nor drink money, nor wear money. It is the goods that money can buy that are being divided up when money is divided up.'[13] Evaluate and explain.

2 Fully evaluate and explain the following statements:

(a) 'The invention of money is one of the great achievements of the human race, for without it the enrichment that comes from broadening trade would have been impossible.'

(b) 'Money's whatever society says it is.'

(c) 'When prices of everything are going up, it is not because everything is worth more, but because the dollar is worth less.'

(d) 'The difficult questions concerning paper [money] are ... not about its economy, convenience or ready circulation but about the amount of the paper that can be wisely issued or created and the possibilities of violent convulsions when it gets beyond bounds.'[14]

3 How might (a) the expanded use of credit cards; and (b) a shortening of worker pay periods affect the transactions demand for money and the equilibrium interest rate?

4 How have the functions of the RBA changed over the last five years? To find out, visit the RBA's website at:
http://www.rba.gov.au/

Examine the history of the RBA, and then its current role. Comment on the significance of these changes for the implementation of monetary policy.

5 What is APRA? What is its role in the Australian financial system? List its main functions following a visit to its website at:
http://www.apra.gov.au

In what way does its role complement that of the RBA? Explain.

NOTES

1 Federal Reserve Bank of Philadelphia, 'Creeping Inflation', *Business Review*, August 1957, p. 3.

2 'Bonds' will be used as a term to cover a range of financial instruments such as interest-bearing securities.

3 For a discussion of the M_1 and M_2 measures of the money supply, see Chapter 15 of J. Jackson & C. McConnell, *Economics*, 3rd Australian edition, McGraw-Hill Book Company Australia, Sydney, 1988.

4 Australian Payments Clearing Association, *Annual Report: 1999*. Available at: www.rba.gov.au/rp_payments_system.html

5 *ibid.*

6 *ibid.*

7 A dollar coin in the hands of X obviously constitutes just $1 of the money supply. But, if we were to count dollars held by banks as a part of the money supply, that same $1 would count for $2 when deposited in a bank. It would count for $1 of deposits owned by X and also for $1 worth of currency resting in the bank's vault. This problem of double-counting can be avoided by excluding currency resting in banks (and currency redeposited in the Reserve Bank or other banks) in determining the total money supply. The exclusion of currency held by, and current deposits owned by, government is somewhat more arbitrary. The major reason for this exclusion is that it permits us to gauge better the money supply and the rate of spending that occurs in the private sector of the economy apart from spending initiated by government policy.

8 The arithmetic of this relationship is slightly more complex than these examples suggest. If we let P equal the price level expressed as an index (base 1.00) and D equal the value of the dollar, then our reciprocal relationship is $D = \frac{1}{P}$. If P equals 1.00, then D obviously is 1.00. But if the index of the price level rises to 1.20, then D will be 0.8333. Hence, a 20 per cent increase in the price level will cause a 16.67 per cent decline in the value of the dollar.

9 Frank G. Graham, *Exchange, Prices and Production in Hyperinflation Germany, 1920–1923*, Princeton University Press, Princeton, NJ, 1930, p. 13.

10 For an interesting account of the origins of banking, see S. J. Butlin, *Foundations of the Australian Monetary System 1788–1851*, Melbourne University Press, Melbourne, 1953. The distinction between trading and savings banks was removed in 1989.

11 The Australian branch system of banking, similar to that of Britain, consists of the banks operating thousands of branches and agencies across Australia, and allows the banks to operate across state boundaries. This contrasts sharply to the American unit banking system, which consists of many thousands of separate private banks, precluded from setting up a branch system extending over state boundaries.

12 In Chapter 13 of the companion book *Microeconomics*, 6th edition, we show that an oligopolistic industry is one with relatively few firms and is often characterised by 'non-price competition'.

13 George Bernard Shaw, *The Intelligent Woman's Guide to Socialism and Capitalism*, Brentano, Inc., New York, 1928, p. 9. Used by permission of the Public Trustee and the Society of Authors.

14 F. W. Taussig, *Principles of Economics*, 4th edn, Macmillan Company, New York, 1946, p. 247.

A LAST WORD HOARDING $100 NOTES

One of the functions of money is as a store of value, which may lead some people to 'hoard' money in its most liquid form: hard currency.

Australians hold 40 per cent of the value of their currency in $100 bills, but a Reserve Bank study suggests such high-denomination notes are rarely used. The study, in the July edition of the Reserve Bank's *Bulletin* issued yesterday, concludes that people are probably hoarding $100 bills as a store of wealth or using them for transactions in the underground economy.

Backing up the argument that people are hoarding large-denomination currency, the study points out that $20 bills are returned to the Reserve Bank five times as often as $100 bills. 'While cultural differences are clearly important in explaining currency demand, the positive relationship between the demand for currency notes and the proportion of high-value notes suggests that hoarding motives may be fundamental in understanding the pattern of currency demand across countries,' the study says.

The study notes that the value of notes and coins outstanding as a share of GDP increased markedly in the first half of the 1990s and is currently just below its highest point in the past 20 years.

'While low inflation has made it less costly to hold wealth in currency, regulatory and taxation factors also may have increased the demand for currency,' the Reserve Bank says. The study says the requirement on financial intermediaries to report large transactions to the Cash Transaction Reports Agency (Austrac); requirements for more stringent identification of depositors; and the deeming of interest for the means test on pensions might have encouraged some people to hold more of their wealth in cash.

The Reserve Bank study also looks more generally at the issue of seigniorage, which is the profit earned from the issuing of banknotes and coins. The study notes that seigniorage is worth around 0.22 per cent of Australia's GDP.

This compares with 0.43 per cent for the United States and 0.50 per cent for Germany, reflecting the large amounts of their currencies held offshore. The US Federal Reserve estimates that more than 50 per cent of the total US currency in circulation is held outside the US. In Germany, the Bundesbank estimates that between 30 per cent and 40 per cent of deutschemarks are held abroad.

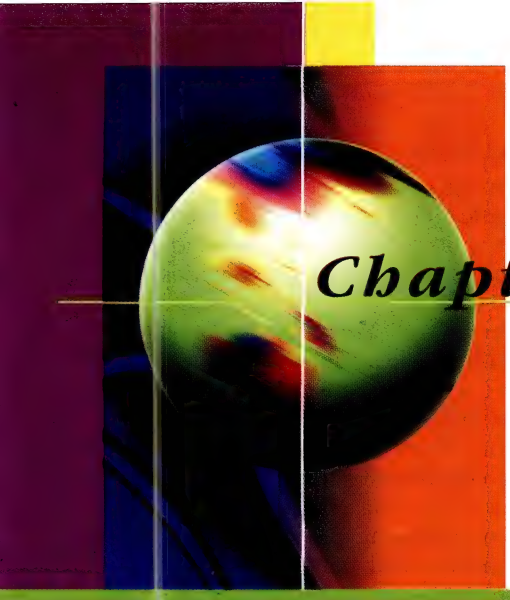
SOURCE: M. Dwyer, Australian Financial Review, *16 July 1997.*

Questions

1 List the primary reasons suggested in the article for the use of $100 notes in Australia. Is the demand for the outstanding stock of $100 notes a useful indicator of the black economy, social security fraud and tax avoidance? Discuss.

2 Why would a fall in inflation make it less costly to hold wealth in the form of cash held outside the financial system? What might the problems associated with this type of practice include?

3 Why might the fact that Australia issues plastic notes provide some part of the explanation for the fact that the rate earned for seigniorage in Australia is lower than that in many other western economies?



Chapter 11 HOW BANKS CREATE MONEY

INTRODUCTION

In Chapter 10 we found that the Reserve Bank of Australia is the source of the economy's currency. You will recall from Table 10.1, however, that deposits with banks formed the major component of the M_3 money supply. Because the vast bulk of all accounts are the deposits of banks, our discussion in this chapter will focus on explaining how banks can create deposit money.

Our objectives in this chapter are few, but of great importance to your understanding of the nature of the monetary system.

LEARNING OBJECTIVES

- **Describe the simplified balance sheets of a single bank and the banking system.**
- **Explain the money-creating abilities of a *single* bank that is part of a multibank system.**
- **Explain the money-creating abilities of the banking *system* as a whole through multiple-deposit expansion, and compare this with the money-creating abilities of the single bank.**
- **Define the money, or credit, multiplier.**
- **Discuss some of the limitations on the banking system's ability to create deposits and expand the money supply.**
- **Describe how the banks' lending activities may contribute to financial instability and to increased fluctuations in the level of economic activity.**

THE BALANCE SHEET OF A BANK

Balance sheet: a statement of assets and claims that summarises the financial position of a firm at a point in time.

Assets: items of economic and financial value.

Net worth: the financial claims of the owners of a firm against the firm's assets.

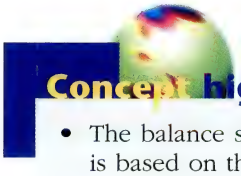
Liabilities: the financial claims of non-owners (creditors) against the firm's assets.

It will be convenient for us to seek our learning objectives through the bank's balance sheet. An understanding of the basic items that make up a bank's balance sheet, and of the manner in which various transactions change these items, will provide us with a valuable analytical tool for grasping the workings of our monetary and banking systems.

What is a **balance sheet**? It is a statement of **assets** and claims that summarises the financial position of a firm—in this case a bank—at some specific point in time. Every balance sheet has one overriding virtue—by definition, it must balance. Why? Because each and every known asset, being something of economic value, will be claimed by someone. Can you think of an asset—something of monetary value—that no one claims? A balance sheet balances because assets equal claims. The claims shown on a balance sheet are divided into two groups: the claims of the owners of a firm against the firm's assets, called **net worth**, and the claims of non-owners, called **liabilities**. Thus it can be said that a balance sheet balances because:

assets = liabilities + net worth

A balance-sheet approach to our study of the money-creating ability of banks is invaluable in two specific respects—on the one hand, a bank's balance sheet provides us with a convenient point of reference from which we can introduce new terms and concepts in a more or less orderly manner; on the other hand, the use of balance sheets allows us to quantify certain strategic concepts and relationships that would defy comprehension if discussed in verbal terms alone.



Concept highlights

- The balance sheet is a summary, taken at a point in time, of the financial position of the bank. It is based on the accounting identity. This states that:

  assets = liabilities + net worth.

- Assets are items of economic and financial value to the bank, while liabilities represent the financial claims of creditors against the bank's asssets.
- Net worth is a residual that ensures that the balance sheet balances and that represents the financial claims of the bank's owners against the bank's net assets.

A SINGLE BANK IN A BANKING SYSTEM

Our immediate goal is an understanding of the money-creating potential of a single bank that is part of a multibank banking system. What accounts constitute a bank's balance sheet? How does a single bank create and destroy money? What factors govern the money-creating abilities of such a bank?

FORMATION OF A BANK

The answers to these questions demand that we understand the details of a bank's balance sheet and how certain, rather elementary transactions affect that balance sheet. We start with the organisation of a local bank.

TRANSACTION 1: THE BIRTH OF A BANK

Let us start from scratch. Suppose some far-sighted citizens of the town of Wahoo decide that their town is in need of a new bank to provide all the banking services needed by that growing community. Assuming these enterprising individuals are able to obtain government approval, they then turn to the task of selling, say, $250 000 worth of capital shares to buyers, both in and out of the community. These financing efforts having met with success; the Bank of Wahoo now exists—at least on paper.[1] How does the Wahoo Bank's balance statement appear at its birth?

The new owners of the bank have sold $250 000 worth of capital shares in the bank—some to themselves, some to other people. As a result, the bank now has $250 000 worth of capital shares or capital stock outstanding. Obviously the cash is an asset to the bank. The cash held by a bank is sometimes dubbed **vault cash** or **till money**. The outstanding shares, however, constitute an equal amount of claims the owners have against the bank's assets; that is, the shares of stock are obviously the net worth of the bank, though they are assets from the viewpoint of those who possess these shares (balance sheet 1).

Vault cash or till money: currency held by a bank to meet customer's currency needs.

Balance sheet 1 Wahoo Bank

Assets ($)		Liabilities and net worth ($)	
Cash	250 000	Capital stock	250 000

TRANSACTION 2: BECOMING A GOING CONCERN

The newly established board of directors must now breathe life into their infant enterprise. They must get the new bank off the drawing board and make it a living reality. The first step is to acquire property and equipment. Suppose the directors, confident of the success of their venture, purchase a building for $220 000 and some $20 000 worth of office equipment. This simple transaction merely changes the composition of the bank's assets. The bank now has $240 000 less in cash and $240 000 worth of new property assets. Balance sheet 2 shows transaction 2, with asterisks indicating the accounts affected. Note that the balance sheet still balances, as indeed it must.

Balance sheet 2 Wahoo Bank

Assets ($)		Liabilities and net worth ($)	
Cash*	10 000	Capital stock	250 000
Property*	240 000		

TRANSACTION 3: ACCEPTING DEPOSITS

We have already emphasised that banks have two basic functions: to accept deposits of money and to make loans. Now that our bank is in operation, let us suppose that the citizens and businesses of Wahoo decide to deposit some $100 000 in the Wahoo Bank. What happens to the bank's balance sheet?

The bank receives cash, which we have already noted is an asset to the bank. To offset the generation of this asset, the depositing of money in the bank creates a new liability account—deposits (balance sheet 3).

Balance sheet 3 Wahoo Bank

Assets ($)		Liabilities and net worth ($)	
Cash*	110 000	Deposits*	100 000
Property	240 000	Capital stock	250 000

You should note that, although there is no direct change in the total supply of money, a change in the composition of the economy's money supply has occurred as a result of transaction 3. Bank money, or deposits, have increased by $100 000 and currency in circulation has decreased by $100 000. Currency held by a bank, you will recall is not considered to be a part of the economy's money supply (see Chapter 10, note 7).

It is obvious that a withdrawal of cash will reduce the bank's deposit liabilities and its holdings of cash by the amount of the withdrawal. This, too, changes the composition, but not the total supply, of money.

TRANSACTION 4: SETTING ASIDE REQUIRED RESERVES

The Wahoo Bank now has $110 000 in cash and is in a position to make loans out of this cash sum. Indeed, it will be profitable to do so. It would be foolhardy to let the whole sum go in the form of loans, as the bank's depositors may call on cash at any time. What proportion, then, should be lent? Alternatively, what proportion should be kept in cash reserve? We will call the ratio of reserves to total deposits the bank's **required reserve ratio**, that is:

Required reserve ratio: the ratio of reserves to deposits required to meet official liquidity requirements and additional requirements determined by normal banking practice.

$$\text{required reserve ratio} = \frac{\text{bank's required reserves}}{\text{bank's deposit liabilities}}$$

We will discuss the way **required reserves** are established by each bank later in this chapter. At present, we shall suppose that the target reserve ratio for all banks is 20 per cent. It is to be emphasised that reserve requirements are fractional—that is, less than 100 per cent. This consideration will be vital in the ensuing analysis of the lending ability of the banking system.

The Wahoo Bank will just be meeting its targeted 20 per cent ratio by keeping $20 000 in reserve.

But let us suppose that the directors of the Wahoo Bank anticipate that their holdings of the public's deposits will grow in the future. Hence, instead of keeping just the minimum amount, $20 000, they keep an extra $90 000, making a total of $110 000 (balance sheet 4). We shall see shortly that it is on the basis of excess reserves that banks can lend and earn interest income.

Balance sheet 4 Wahoo Bank

Assets ($)		Liabilities and net worth ($)	
Cash*	0	Deposits	100 000
Reserves*	110 000	Capital stock	250 000
Property	240 000		

A note on terminology—the amount by which the bank's **actual reserves** exceed its target required reserves is the bank's **excess reserves**. This is also called a *margin of free liquidity*.

In this case:

actual reserves	$110 000
required reserves	−20 000
excess reserves	$90 000

The only reliable way of computing excess reserves is to multiply the bank's deposit liabilities by the target reserve ratio ($100 000 × 20 per cent = $20 000) to obtain required reserves, then to subtract this figure from the actual reserves listed on the asset side of the bank's balance sheet. To ensure an understanding of this process, you should compute excess reserves for the bank's balance sheet as it stands at the end of transaction 4 on the assumption that the reserve ratio is (a) 5 per cent; (b) 15 per cent; (c) 25 per cent.

Because the ability of a bank to make loans depends upon the existence of excess reserves, the concept is of vital importance in grasping the money-creating ability of the banking system.

TRANSACTION 5: A CHEQUE IS DRAWN AGAINST THE BANK

Now let us tackle a very significant and somewhat more complicated transaction. Suppose that Mr Bradshaw, a Wahoo farmer who deposited a substantial portion of the $100 000 in deposits that the Wahoo Bank received in transaction 3, purchases $50 000 worth of farm machinery. Bradshaw very sensibly pays for this machinery by drawing a $50 000 cheque, against his deposit in the Wahoo Bank, in favour of the machinery company. This cheque is then deposited in another bank and eventually cleared against the Wahoo Bank.[2] What happens?

Whenever a cheque is drawn against a bank and deposited in another bank, the collection of that cheque will entail a loss of both reserves and deposits by the bank upon which the cheque is drawn. Conversely, if a bank receives a cheque drawn on another bank, the bank receiving the cheque will, in the process of collecting it, have its reserves and deposits increased by the amount of the cheque. In our example, the Wahoo Bank loses $50 000 in both reserves and deposits. But there is no loss of reserves or deposits for the banking system as a whole. What one bank loses, another bank gains.

Bringing all the other assets and liabilities back into the picture, the Wahoo Bank's balance sheet 5 shows the result of transaction 5.

Balance sheet 5 Wahoo Bank

Assets ($)		Liabilities and net worth ($)	
Reserves*	60 000	Deposits*	50 000
Property	240 000	Capital stock	250 000

You should verify that with a 20 per cent reserve requirement the bank's excess reserves now stand at $50 000.

Transaction 5 is obviously reversible. If a cheque drawn against another bank is deposited in the Wahoo Bank, the Wahoo Bank will receive both reserves and deposits equal to the amount of the cheque as it is collected. Let us summarise the conclusions from the first five transactions that we have analysed:

1 When a bank accepts deposits of cash, the composition of the money supply is changed, but the total supply of money is not directly altered.

2 Banks keep 'reserves', equal to a specified percentage of their own deposit liabilities. The reserve ratio indicates the size of this 'specified percentage', which determines the level of required reserves.

3 The amount by which a bank's actual reserves exceed its required reserves is called 'excess reserves'.

4 A bank that has a cheque drawn and collected against it loses both reserves and deposits equal to the value of the cheque to the bank receiving the cheque.

Business IMPLICATION

WHY DO BUSINESSES HAVE CAPITAL RESERVES?



Businesses, including banks, have capital reserves for a number of reasons, including the ability to access ready funds to invest in new projects. However, the primary reason that businesses need capital reserves is to protect their creditors—those to whom the business owes money. Capital represents the investment funds that investors have put at risk—the risk that the business will not be profitable and will lead to a loss of their investment. Thus, the investors are supposed to risk a loss of their moneys, not the individuals or organisations that have lent to the business or provided goods and services on credit. The implication is that a poorly capitalised business is a risky business—risky particularly to those businesses that conduct business with it.

MONEY-CREATING TRANSACTIONS OF A BANK

The next two transactions are particularly crucial because they explain how a single bank can literally create money by making loans and by purchasing government bonds. Though these transactions are similar in many respects, we treat them separately.

TRANSACTION 6: GRANTING A LOAN

You will recall that, in addition to accepting deposits, banks have a basic function of granting loans to borrowers. What effect does bank lending have upon the balance sheet of a bank?

Suppose that the Grisley Meat Packing Company of Wahoo decides that the time is ripe to expand its facilities. Suppose, too, that the company needs exactly $50 000—which, by some unexplained coincidence, just happens to be equal to the Wahoo Bank's excess reserves—to finance this project.

The company approaches the Wahoo Bank and requests a loan for this amount. The Wahoo Bank is acquainted with the Grisley company's fine reputation and financial soundness and is convinced of its ability to repay the loan. So the loan is granted. The chairman of the Grisley company hands a promissory note—or loan agreement, a high-class IOU—to the Wahoo Bank. The Grisley company, like all other modern firms, is interested in paying its obligations by cheque or electronic transfer. Hence, instead of receiving a basketful of cash from the bank, the Grisley company receives a $50 000 increase in its deposit in the Wahoo Bank. From the Wahoo Bank's standpoint it has acquired an interest-earning asset (the promissory note) and has deposits to pay for this asset.

In short, the Grisley company has swapped an IOU for the right to draw an additional $50 000 worth of transfers against its deposit in the Wahoo Bank. Both parties are pleased with themselves. The Wahoo Bank now possesses a new asset—an interest-bearing promissory note, which it happily files under the general heading of 'Loans'. The Grisley company, sporting a fattened deposit account, is now in a position to expand its operations.

At the moment the loan is negotiated, the balance sheet of the Wahoo Bank's position is shown by balance sheet 6(a).

Balance sheet 6(a) Wahoo Bank (when loan is negotiated)

Assets ($)		Liabilities and net worth ($)	
Reserves*	60 000	Deposits*	100 000
Loans*	50 000	Capital stock	250 000
Property	240 000		

All this looks innocent enough. But a closer examination of the Wahoo Bank's balance statement reveals a startling fact—when a bank makes loans, it creates money. The president of the Grisley company went to the bank with something that is not money—an IOU—and walked out with something that is money—a deposit.[3] When banks lend, they create account deposits that are money. By extending credit, the Wahoo Bank has 'monetised' an IOU. The Grisley company and the Wahoo Bank have created and then swapped claims. The claim created by the Grisley company and given to the bank is not money; an individual's IOU is not generally acceptable as a medium of exchange. But the claim created by the bank and given to the Grisley company *is* money; amounts drawn against a deposit are acceptable as a medium of exchange. It is through the extension of credit by banks that the bulk of the money used in our economy is created.

But there are important forces that circumscribe the ability of a bank to create deposits—that is, 'bank money'—by lending. In the present case, the Wahoo Bank can expect the newly created deposit of $50 000 to be a very active account. The Grisley company would not borrow $50 000 at, say, 15 per cent for the sheer joy of knowing the funds were available if needed. Let us assume that the Grisley company awards a $50 000 contract to the Quickbuck Construction Company. Quickbuck, true to its name, completes the expansion job and is rewarded with a cheque for $50 000, drawn by the Grisley company against its deposit in the Wahoo Bank. The Quickbuck company, having its headquarters outside Wahoo, does not deposit this back in the Wahoo Bank but instead deposits it in the Yarloo City Bank. The Yarloo City Bank now has a $50 000 claim against the Wahoo Bank. This cheque is collected in the manner described in transaction 5. As a result, the Wahoo Bank loses both reserves and deposits equal to the amount of the cheque; the Yarloo City Bank acquires $50 000 of reserves and deposits. In short, assuming a cheque is drawn by the borrower for the entire amount of the loan ($50 000) and given to a firm that deposits it in another bank, the Wahoo Bank's balance sheet 6(b) shows the situation after the cheque has been cleared.

Balance sheet 6(b) Wahoo Bank (after cheque drawn on the loan has been collected)

Assets ($)		Liabilities and net worth ($)	
Reserves*	10 000	Deposits*	50 000
Loans*	50 000	Capital stock	250 000
Property	240 000		

You will note immediately that, after the cheque has been collected, the Wahoo Bank is just barely meeting its target reserve ratio of 20 per cent. The bank has no excess reserves. This poses an interesting question: could the Wahoo Bank have lent an amount greater than $50 000—an amount greater than its excess reserves—and still have met the 20 per cent reserve requirement if a cheque for the full amount of the loan were cleared against it? The answer is 'no'. For example, suppose the Wahoo Bank had lent $55 000 to the Grisley company. Collection of the cheque against the Wahoo Bank would have lowered its reserves to $5000 (= $60 000 − $55 000) and deposits would again stand at $50 000 (= $105 000 − $55 000). The ratio of actual reserves to deposits would now be only $5000 ÷ $50 000, or 10 per cent. The Wahoo Bank could thus not have lent $55 000.

By experimenting with other figures in excess of $50 000, you will find that the maximum amount that the Wahoo Bank could lend at the outset of transaction 6 is $50 000. This figure is identical to the amount of excess reserves that the bank had available at the time the loan was negotiated. We can conclude that a single bank in a multibank banking system can lend only an amount equal to its initial pre-loan excess reserves. Why? Because when it lends, it faces the likelihood that cheques for the entire amount of the loan will be drawn and cleared against the lending bank. A lending bank can anticipate the loss of reserves to other banks equal to the amount it lends.[4]

If banks create deposits—that is, money—when they make loans, it seems logical to inquire whether money is destroyed when the loans are repaid. The answer is 'yes'. Using balance sheet 6(b), let us see what happens when the Grisley company repays the $50 000 that it borrowed.

To simplify, we shall:

1. suppose that the loan is repaid not in instalments but rather in one lump sum three years after the date of negotiation
2. ignore the interest charges on the loan.

The Grisley company will write a cheque for $50 000 against its deposits, which presumably have been fattened by extra profits resulting from the company's expanded operations. As a result, the Wahoo Bank deposit liabilities decline by $50 000; the Grisley company has given up $50 000 worth of its claim against the bank's assets. In turn, the bank surrenders the Grisley company's IOU, which it has been patiently holding these many months. The bank and the company have reswapped claims. But the claim given up by the Grisley company is money; the claim it is repurchasing—its IOU—is not. The supply of money has therefore been reduced by $50 000; that amount of deposits has been destroyed, unaccompanied by any increase in the money supply elsewhere in the economy. The Grisley company's IOU has been 'demonetised'. On the Wahoo Bank's balance sheet, demand deposits and loans both fall by $50 000. You will note that the decline in deposits increases the bank's holdings of excess reserves; this provides the basis for new loans to be made.

In the highly unlikely event that the Grisley company repays the loan with cash, the supply of money will still decline by $50 000. In this case, the Grisley company would repurchase its IOU by handing over $50 000 in cash to the bank. This causes loans to fall on the bank's balance sheet by $50 000 and, obviously, cash to increase by $50 000. Remember that we specifically excluded currency held by banks from the money supply on the grounds that to include such cash would be double-counting; it is apparent that this constitutes a $50 000 reduction in the supply of money.

TRANSACTION 7: BUYING GOVERNMENT BONDS

When a bank buys government bonds, the effect is substantially the same as that of lending. New money is created. To illustrate, let us assume that the Wahoo Bank's balance sheet initially stands as it did at the end of transaction 5. Now assume that, instead of making a $50 000 loan, the bank buys $50 000 of government bonds from a bond dealer. The bank receives the interest-bearing bonds that appear on its balance statement as the asset 'Bonds' and gives the dealer an increase in its deposit account. Balance sheet 7 shows the result.

Balance sheet 7 Wahoo Bank

Assets ($)		Liabilities and net worth ($)	
Reserves*	60 000	Deposits*	100 000
Bonds*	50 000	Capital stock	250 000
Property	240 000		

The important point is that deposits—that is, the supply of money—have been increased by a total of $50 000, as in transaction 6. A bank's bond purchases increases the supply of money in the same way as does lending to the public. The bank accepts government bonds, which are not money, and gives the bond dealer an increase in its deposits, which is money.

Of course, when the bond dealer draws and clears a cheque for $50 000 against the Wahoo Bank, the bank loses both reserves and deposits in that amount and therefore is just meeting the legal reserve requirement. Its balance sheet now reads precisely as in 6(b), except that 'Bonds' is substituted for 'Loans' on the asset side.

Finally, as you undoubtedly suspect, the selling of government bonds by a bank—like the repayment of a loan—reduces the supply of money. The bonds buyer pays by cheque and both 'Bonds' and 'Deposits' (the latter being money) decline by the amount of the sale.

PROFITS AND LIQUIDITY

The relative importance of the various asset items on a bank's balance sheet is the result of the banker's pursuit of two conflicting goals. One goal is profits. Banks, like any other business, are seeking profits. To this end, the bank is desirous of holding loans and bonds, the major earning assets of banks. On the other hand, a bank must seek safety. For a bank, safety lies in liquidity—specifically, such liquid assets as cash and excess reserves. Banks must be on guard for depositors transforming their deposits into cash. Similarly, the possibility exists that more cheques and electronic transfers will be cleared against a bank than are cleared in its favour, causing a net outflow of reserves. Bankers are thus seeking a proper balance between prudence and profits. The compromise that is achieved determines the relative size of earning assets as opposed to highly liquid assets, and is important in determining the size of the required reserve ratio.

Concept highlights

- Banks 'create' money—that is, generate deposits, or bank money—when they make loans. They 'destroy' money when these loans are recalled. Banks may also create additional money through the generation of deposit accounts against the purchase of bonds. Money is 'destroyed' when these deposits are withdrawn.
- The ability of a single bank to create money by lending depends on the size of its excess reserves. Excess reserves represent a margin of free liquidity above the target or required reserves that are held by the bank to ensure it has sufficient liquidity to maintain its operations.
- Because cheques drawn by borrowers are usually deposited in other banks, the lending bank suffers a loss of excess reserves and deposits equal to the amount that it has lent.

THE BANKING SYSTEM: MULTIPLE-DEPOSIT EXPANSION

So far we have discovered that a single bank in a banking system can lend dollar for dollar with its excess reserves. Now what of the lending ability of all banks taken as a group? When we have concluded our analysis, we will find that the bank system can lend—that is, can create money—by a multiple of its excess reserves. This multiple lending is accomplished despite the fact that each bank in the system can lend only dollar for dollar with its excess reserves. The immediate task is to uncover how these seemingly paradoxical conclusions come about.

To do this, it is necessary that we keep our analysis as clear as possible. Therefore, we will rely on three simplifying assumptions. First, suppose that the reserve ratio for all banks is 20 per cent. Second, assume initially that all banks are exactly meeting this 20 per cent reserve target. No excess reserves exist; all banks are 'loaned up'. Third, we will suppose that if any bank becomes able to increase its loans as a result of acquiring excess reserves, an amount equal to these excess reserves will be lent to one borrower, who will write a cheque for the entire amount of the loan and give it to someone else, who will deposit the cheque in another bank. This third assumption simply means that we are assuming the worst thing possible that can happen to any lending bank—a cheque for the entire amount of the loan is drawn and cleared against it and in favour of another bank.

THE BANKING SYSTEM'S LENDING POTENTIAL

To begin, suppose someone deposits $100 in currency in bank A, and the bank adds this to its reserves, item a_1. Balance sheet 8 shows the result. (We are recording only changes in the balance sheets of the various banks.)

Balance sheet 8 Bank A

Assets ($)		Liabilities and net worth ($)	
Reserves	+100 (a_1) −80 (a_3)	Current deposits	+100 (a_1) +80 (a_2) −80 (a_3)
Loans	+80 (a_2)		

You will recall from transaction 3 that this $100 deposit of currency does *not* alter the money supply; while $100 of deposit money comes into being, an offsetting $100 of currency has gone out of circulation. What has happened is that bank A has acquired *excess reserves* of $80. Of the newly acquired $100 in reserves, 20 per cent, or $20, must be earmarked to offset the new $100 deposit and the remaining $80 is excess reserves. Remembering that a single bank, such as bank A, can lend only an amount equal to its excess reserves, we conclude that bank A can lend a maximum of $80. When a loan for this amount is negotiated, bank A's loans will increase by $80, and the borrower will get an $80 deposit. Let us add these figures to bank A's balance sheet as item a_2.

But now we must invoke our third assumption: the borrower draws a cheque for $80—the entire amount of the loan—and gives it to someone who deposits it in another bank, bank B. As we saw in transaction 6, bank A loses both reserves and deposits equal to the amount of the loan, item a_3. The net result of all the transactions is that bank A's reserves now stand at $20 (= $100 − $80), loans at $80 and deposits at $100 (= $100 + $80 − $80). Note that when the dust has settled, bank A is just meeting the 20 per cent reserve ratio.

Recalling transaction 5, bank B *acquires* both the reserves and the deposits that bank A has lost (b_1, balance sheet 9).

Balance sheet 9 Bank B

Assets ($)		Liabilities and net worth ($)	
Reserves	+80 (b_1)	Current deposits	+80 (b_1)
	−64 (b_3)		+64 (b_2)
			−64 (b_3)
Loans	+64 (b_2)		

When the cheque is drawn and cleared, bank A *loses* $80 in reserves and deposits and bank B gains $80 in reserves and deposits. But 20 per cent, or $16, of bank B's newly acquired reserves must be kept as required reserves against the new $80 in deposits. This means that bank B has $64 (= $80 − $16) in excess reserves. It can therefore lend $64 ($b_2$). When the borrower draws a cheque for the entire amount and deposits it in bank C, the reserves and deposits of bank B both fall by the $64 ($b_3$). As a result of these transactions, bank B's reserves will now stand at $16 (= $80 − $64), loans at $64 and demand deposits at $80 (= $80 + $64 − $64). After all this has occurred, bank B is just meeting the 20 per cent reserve requirement.

We are off and running again. Bank C has acquired the $64 in reserves and deposits lost by bank B (c_1, balance sheet 10).

Balance sheet 10 Bank C

Assets ($)		Liabilities and net worth ($)	
Reserves	+64.00 (c_1)	Current deposits	+64.00 (c_1)
	−51.20 (c_3)		+51.20 (c_2)
			−51.20 (c_3)
Loans	+51.20 (c_2)		

Exactly 20 per cent, or $12.80, of this new reserve will be required, the remaining $51.20 being excess reserves. Hence, bank C can safely lend a maximum of $51.20. Suppose it does ($c_2$). And suppose the borrower draws a cheque for the entire amount and gives it to someone who deposits it in another bank (c_3).

Bank D, the bank receiving the $51.20 in reserves and deposits, now notes these changes on its balance sheet (d_1, balance sheet 11).

Balance sheet 11 Bank D

Assets ($)		Liabilities and net worth ($)	
Reserves	+51.20 (d_1) −40.96 (d_3)	Current deposits	+51.20 (d_1) +40.96 (d_2) −40.96 (d_3)
Loans	+40.96 (d_2)		

It can now lend $40.96 ($d_2$). The borrower draws a cheque for the full amount and deposits it in another bank (d_3).

Now, if we wanted to, we could go ahead with this procedure by bringing banks E, F, G, H ... N into the picture. We shall merely suggest that you check through computations for banks E, F and G to ensure that you have the procedure firmly in mind.

The nucleus of this analysis is summarised in Table 11.1. Data for banks E to N are supplied, so you may check your computations. Our conclusion is a rather startling one—on the basis of the $80 in excess reserves (acquired by the banking system when someone deposited the $100 of currency in bank A), the *bank system* is able to lend $400. Lo and behold, the banking system is able to lend by a multiple of 5 when the reserve ratio is 20 per cent! Yet you will note that each single bank in the banking system is lending only an amount equal to its excess reserves. How do we explain these seemingly conflicting conclusions? Why is it that the *banking system* can lend by a multiple of its excess reserves, but *each individual bank* can lend only dollar for dollar with its excess reserves?

The answer lies in the fact that reserves lost by a single bank are not lost to the banking system as a whole. The reserves lost by bank A are acquired by bank B. Those lost by B are gained by C. C loses to D, D to E, E to F, and so on. Hence, although reserves can be, and are, lost by *individual* banks in the banking system, there can be no loss of reserves for the banking system as a whole. Hence, we reach the curious conclusion that an individual bank can safely lend only an amount equal to its excess reserves, but that the banking system can lend by a multiple of its excess reserves. This contrast, incidentally, is a fine illustration of why it is imperative that we keep the fallacy of composition firmly in mind (see Chapter 1). Banks as a group can create money by lending in a manner much different from that of the individual banks in the system.

THE MONETARY MULTIPLIER

The rationale involved in this **deposit**, **credit** or **monetary multiplier** is not unlike that underlying the income multiplier discussed in Chapter 7. The income multiplier was based on the fact that the expenditures of one household are received as income by another; the monetary multiplier rests on the fact that the reserves and deposits lost by one bank are received by another bank. And, just

Deposit, credit or monetary multiplier: the reciprocal of the required reserve ratio, showing the maximum number of new dollars of deposits that can be created for a single dollar of excess reserves.

as the size of the income multiplier is determined by the reciprocal of the MPS (that is, by the leakage into saving that occurs at each round of spending), so the monetary multiplier m is the reciprocal of the required reserve ratio R (that is, of the leakage into required reserves that occurs at each step in the lending process). In short:

$$\text{monetary multiplier} = \frac{1}{\text{reserve ratio}}$$

or

$$m = \frac{1}{R}$$

In this formula, m tells us the maximum number of new dollars of deposits that can be created for a single dollar of excess reserves, given the value of R. To determine the maximum amount of new deposit money, D, that can be created by the banking system on the basis of any given amount of excess reserves, E, we simply multiply the excess reserves by the monetary multiplier, that is:

$$\text{maximum current deposit expansion} = \text{excess reserves} \times \text{monetary multiplier}$$

or

$$D = E \times m$$

Thus in our example of Table 11.1:

$$\$400 = \$80 \times 5$$

But keep in mind that, despite the similar rationale underlying the income and deposit multipliers, the former has to do with changes in income and the latter with changes in the supply of money.

Table 11.1 Expansion of the money supply by the bank system

Bank	(1) Actual reserves and deposits	(2) Required reserves	(3) Excess reserves, or (1) – (2)	(4) Amount which the bank can lend; new money created = (3)
Bank A	\$100.00 (a_1)	\$20.00	\$80.00	\$80.00 (a_2)
Bank B	80.00 (a_3, b_1)	16.00	64.00	64.00 (a_2)
Bank C	64.00 (b_3, c_1)	12.80	51.20	51.20 (a_2)
Bank D	51.20 (c_3, d_1)	10.24	40.96	40.96 (a_2)
Bank E	40.96	8.19	32.77	32.77
Bank F	32.77	6.55	26.22	26.22
Bank G	26.22	5.24	20.98	20.98
Bank H	20.98	4.20	16.78	16.78
Bank I	16.78	3.36	13.42	13.42
Bank J	13.42	2.68	10.74	10.74
Bank K	10.74	2.15	8.59	8.59
Bank L	8.59	1.72	6.87	6.87
Bank M	6.87	1.37	5.50	5.50
Bank N	5.50	1.10	4.40	4.40
Other banks	21.97	4.40	17.57	17.57
Total amount of money created				**\$400.00**

You might experiment with these teasers in testing your understanding of multiple credit expansion by the banking system:

1 Rework the preceding analysis (at least three or four steps of it) on the assumption that the reserve ratio is 5 per cent and then 10 per cent. What is the maximum amount of money the banking system could create upon acquiring $100 in new reserves and deposits?

2 Explain how a banking system that is 'loaned up' and faced with a 20 per cent reserve ratio might be forced to reduce its outstanding loans by $400 as a result of a $100 cash withdrawal from a deposit that forces the bank to draw down its reserves by $100.



Concept highlights

- The banking system as a whole can lend by a multiple of its excess reserves because it cannot lose reserves, even though individual banks can lose reserves to other banks in the system.
- It is the retention of excess reserves within the banking system that forms the basis for the ability of the banking system to create deposit money.
- The multiple by which the banking system can lend is the reciprocal of the target or required reserve ratio. This is known as the monetary multiplier.
- Any increase in reserves held in the system will lead to an increase in the level of deposits equal to the initial value of excess reserves multiplied by the multiplier. Alternatively:

  maximum current deposit expansion (D) = excess reserves (E) × monetary multiplier (m)
- The multiple credit expansion process is reversible and will lead to a multiple reduction in the level of deposits—and hence the supply of money—if reserves are withdrawn.

SOME MODIFICATIONS

Our discussion of credit expansion has been conducted in a somewhat rarefied atmosphere. There are certain complications and realities that modify the quantitative preciseness of our analysis.

DETERMINING THE REQUIRED RESERVE RATIO

The **Australian Prudential Regulation Authority** (**APRA**) has a general supervisory control over the banks and other financial institutions, which must report regularly and in detail to it. Of particular importance to depositors and the public's confidence in the banking system is the role that APRA plays in ensuring that banks maintain sufficient liquidity, in the form of prime assets, and that capital, basically in the form of shareholders' funds plus reserves, be adequate to cover losses.

CURRENT AUSTRALIAN SYSTEM

The liquidity requirement, as indicated by the **prime assets ratio** (**PAR**), refers to the proportion of the banks' total liabilities (not including shareholders' funds) that must be held in a highly liquid form—as currency, as deposits with the Reserve Bank, and as government securities.

Asian FOCUS

BANK MORTGAGE LOANS STILL HAVE A WAY TO GO

A common feature of life in many developed western economies is the presence of the home mortgage, and the associated part ownership (along with the bank) of the family home. Mortgages, however, are not as common in Asia as in other parts of the world, suggesting that banks in the region may be able to significantly develop and expand their consumer loan portfolios.

Country	Percentage of households with a mortgage
China, Hong Kong SAR	20
India	1
Philippines	3
Malaysia	10
South Korea	26
Thailand	4
Taiwan	33
United Kingdom	68
United States	70

SOURCE: Meera Tharmaratnam, 'Grabbing That Wallet Share', Banking World Hong Kong, *January 2000.*

Questions

1 What factors may have prevented banks in Asia from developing a mortgage market as extensive as in countries such as the UK and US? In your answer, list factors that will affect the banks' willingness and ability to develop this loan market, and potential customers' willingness and ability to access the mortgage market.

2 What does the lack of development of the mortgage market in many Asian countries suggest about the markets for consumer debt in general? What is likely to happen to these markets as incomes within the region grow? Explain the reasoning behind your answer.

Prime assets ratio (PAR): the proportion of banks' total liabilities (not including shareholders' funds) that must be held in a highly liquid form. This includes currency, deposits with the Reserve Bank, and government securities. The PAR reflects both negotiations with APRA and prudent banking practice.

At the end of 1998 the previous prudential system under which a formally determined and set PAR ratio was maintained ceased to exist. This was replaced with an agreed liquidity policy on liquidity management for each bank. It is now the responsibility of a bank's board and management to ensure that sufficient liquidity is held by the bank to meet its obligations. Banks must inform APRA of concerns over their current or future liquidity profiles and their plans to rectify any problems. **Prime assets** continue to play an important role in the system, because under real-time gross settlement (RTGS), the Reserve Bank will still accept only prime assets (and repos) in exchange for cash. Liquidity management policies are not supposed to assume that the Reserve Bank will provide support to the bank during crises.

APRA and each bank review the bank's policies in a number of areas to ensure that Australian and global liquidity risks are limited to acceptable levels. Each bank is required to formulate a liquidity policy statement covering the banking group and including all on- and off-balance sheet activities. These policies cover systems, including liquidity measurement, information systems and

controls; and plans for the management of liquidity under different scenarios and under adverse conditions. Factors considered in establishing the liquidity policy include the size and nature of a bank's operations; the bank's standing in markets; and liability diversification, in particular the bank's contingency plans for sourcing funds during crises. Banks are required to have sufficient liquidity for a minimum of five business days, even under adverse conditions. Currently, banks hold about 5.5 per cent of the value of their liabilities as prime assets.

Capital adequacy: the ability to make claims against shareholders sufficient to cover losses should the bank be liquidated. Currently, the banks are required to maintain financial capital equivalent to 8 per cent of their risk-weighted assets

Capital adequacy—the ability to make claims against shareholders sufficient to cover losses should the bank be liquidated—requires the banks to maintain financial capital equivalent to 8 per cent of the banks' risk-weighted assets.

As the term 'risk-weighted' suggests, some assets are assumed to carry a greater risk of loss, and so a greater proportion of their value is used to determine capital adequacy. For example, Commonwealth government securities with maturities of less than one year have a zero risk weighting. It is considered that there is no chance of default on these assets. Mortgages against residential properties carry a 50 per cent risk weighting; financial guarantees have a risk weighting of 100 per cent. Thus financial capital equivalent to 8 per cent of the value of all financial guarantees is required to meet capital adequacy requirements, while mortgages require financial capital equivalent to only 4 per cent of their value.

Business IMPLICATION

WHAT CAN WE LEARN FROM THE BANKS' LIQUIDITY POLICIES?



Banks need to determine their liquidity requirements via negotiation with the Australian Prudential Regulation Authority. An essential stage of this process is to have a liquidity plan in place. Liquidity—having sufficient cash to meet your ongoing operational needs—is the lifeblood of every business, particularly small businesses. Thus it is useful to consider some the general ideas and issues raised by the banks' needs for, and implementation of, their liquidity plans. These include that:

- the presence of liquidity plans adds to the confidence held in the organisation, as it suggests that a full review of the business has been conducted and that plans and procedures have been put in place to cover a variety of potential outcomes
- adequate liquidity is ensured by having a variety of sources and arrangements in place, reducing exposure to any one source of liquidity
- a liquidity plan focuses management's attention on cash and liquid asset management, leading to optimal use of these resources
- absolute levels of liquidity are less relevant than the ability to access sufficient liquidity to meet most operational requirements.

OTHER LEAKAGES

Aside from the leakage of required reserves at each step of the lending process, three other **leakages** of money from the banks might occur, thereby dampening the money-creating potential of the banking system.

CURRENCY DRAINS

A borrower may request that a part of a loan be paid in cash. Or the recipient of a cheque drawn by a borrower may present it at the bank to be redeemed

partially or wholly in currency rather than added to the borrower's account. Thus, if the person who borrowed the $80 from bank A in our illustration asked for $16 of it in cash and the remaining $64 as a deposit, bank B would receive only $64 in new reserves (of which only $51.20 would be excess), rather than $80 (of which $64 was excess). This decline in excess reserves reduces the lending potential of the banking system accordingly. As a matter of fact, if the first borrower had taken the entire $80 in cash and if this currency remained in circulation, the multiple expansion process would have stopped then and there. But the convenience and safety of deposits make this unlikely.

TRANSFERS OF DEPOSITS TO THE NON-BANK FINANCIAL INSTITUTIONS

The transfer of funds to the non-bank financial institutions should, it would appear, limit the credit creation ability of the banks. However, this may not be as significant a factor for our analysis as it first appears.

Most non-bank financial institutions maintain deposits with a bank (recall the definition of broad money from Chapter 10). Deposits of the non-banks with the banks thus represent the non-bank financial institutions' reserves (along with currency) held against their own deposit liabilities. Thus most of the leakage from the bank to the non-bank sector of the financial system returns as deposits held by the non-bank financial institutions with the banks.

In fact, any leakage from the banks to the non-bank financial institutions that is used to make loans ultimately ends up as the fractional reserve backing of the non-bank financial institutions as they go through a deposit creation process of their own. These funds are then returned to the banking system as deposits. Currency holdings by the non-bank financial institutions are, in fact, the major limiting factor in this case.

EXCESS RESERVES

Our analysis of the banking system's ability to expand the money supply by lending is based on the supposition that banks have determined a precise reserve requirement, or are required to maintain one. In practice, bankers may arrange to have a 'safety margin' of excess reserves. Therefore bank A, upon receiving $100 in new cash, might choose to add $25, rather than its required minimum of $20, to its reserves. The overall credit expansion potential of the banking system would obviously be reduced by such additions to a bank's excess reserves.[5]

WILLINGNESS TO BORROW

On the other hand, banks may not be able to take full advantage of their excess reserves and credit-creating potential if they are unable to find sufficient qualified borrowers willing to apply for loans. This is likely to be the case during a recession, when business confidence is low; businesses may not be willing to borrow from the banks, allowing the banks to create deposit liabilities in the businesses' names, if they view the future pessimistically.

FINANCIAL INSTABILITY AND THE NEED FOR CONTROL

The effects of banks on credit creation are of more than passing interest. These may be a factor that contributes significantly to business fluctuations—to the magnitude of the business cycle, in particular. In considering this issue we need to reflect on the banks' ability to create money—through the making of loans and the generation of deposits—and their ability to determine the extent to

which they hold excess reserves. We need to consider what factors will create incentives to hold more or less of these excess reserves. We will do this in terms of the phases of the business cycle (see Chapter 5).

Global SNAPSHOT GROWTH IN THE MONEY SUPPLY

The supply of money, especially that component related to the expansion of bank credit, appears to be constantly in a positive state of growth. Modern economies appear to require an almost continuous state of growth in their money supplies to grease the wheels and gears of the economic system. Here we present data on the average annual growth rate in the money supply for different economies in our region and around the globe during 1990–97.

Country	Average annual growth in the money supply (1990–97)
United States	4.9
Canada	7.5
Australia	12.2
Japan	7.6
New Zealand	3.0
Denmark	5.9
Greece	16.6
Iceland	12.0
Norway	8.7
Switzerland	6.6
United Kingdom	10.4
South Africa	16.8
China, mainland	24.1
China, Hong Kong SAR	9.6
India	16.0
Indonesia	17.3
Korea	12.6
Malaysia	19.2
Pakistan	16.1
Philippines	16.1
Singapore	9.3
Thailand	12.0

SOURCE: International Monetary Fund, International Financial Statistics, *December 1999.*

Questions

1. What factors might be used to explain differences in the rate of growth of the money supply in each of the economies listed in the above table?
2. What might the rate of growth in the money supply be an indicator of? Explain.
3. Are either the level of the money supply or its rate of growth really open to simple interpretations? Why or why not?

BANK LENDING: RECOVERY AND PEAK OF THE BUSINESS CYCLE

During recovery—as the economy moves away from the trough of the business cycle—output, employment and business profits all tend to increase rapidly. Businesses that may have struggled to service loans during the recession find that their sales have increased substantially, and their operating incomes now more easily cover interest payments on their debt. Levels of stocks—inventory investment—held by business decline. Each of these factors contributes to the improvement in the general level of business confidence and feeds into an incentive to undertake further investment. Business becomes more willing to borrow. The investment-demand curve shifts to the right.

The increase in demand for funds by business might be expected to lead to substantial increases in interest rates charged to business. However, banks, seeing an improvement in the creditworthiness and profitability of business, may become more willing to lend. Competition to lend to profitable businesses may see an easing of credit standards and encourage lending to more speculative business ventures. The level of excess reserves held by the banks is reduced and there is a maximum increase in the money supply.

Such an increase in lending, and the easing of conditions under which credit is available, may further fuel and expand the demand for investment. GDP increases more strongly; thus, the peak of the business cycle occurs at a higher level than would be attained without the additional impact of the banks' 'animal spirits', along with those of business generally. Inflation may also increase strongly, as the strength of the boom brings more and more of the product and resource markets into shortage.

The key point is that by lending and thereby creating credit to the maximum of their ability during prosperity, banks may contribute to an excess of aggregate demand and to the resulting inflationary pressures.

BANK LENDING: RECESSION AND TROUGH OF THE BUSINESS CYCLE

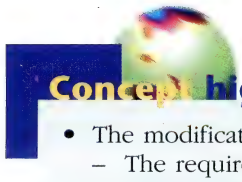
During recession—as the economy moves towards the trough of the business cycle—the growth rates of output and employment, and the level of business profits, all tend to fall. Levels of stocks held by business increase. The general level of business confidence falls. Plans for additional investment are shelved for better times. The investment-demand curve shifts to the left. Banks start to notice that more of their customers are having difficulty servicing their loans. Default on loan repayments becomes more common.

What is the response of banks to the deterioration in business and credit conditions? Banks, seeking to improve their reserves to cover losses and to improve their general liquidity position, may start to call in loans. Lending criteria tighten, with banks seeking to lend only to those most easily able to service their debts. The rate of growth in the number and value of loans falls, perhaps turns negative, and the supply of money tends to contract—banks increase their levels of excess reserves.

The lack of availability of bank credit causes businesses to cut back further on their investment activities; that is, the investment-demand schedule shifts further to the left, further reducing the growth of GDP. The trough in the business cycle occurs at a lower level of activity than would have resulted if banks had maintained their lending.

The key point is that by holding back on credit expansion as the economy begins to slip into a depression, the banks may have further inhibited aggregate demand and intensified that cyclical downswing. Banks thus have provided a source of financial instability—fluctuations in the level of the money supply—which have consequences for the real levels of activity in the economy.

Chapter 12 will explore the means by which the Reserve Bank can attempt to influence the lending ability of banks so that they will offset rather than enforce cyclical fluctuations.



Concept highlights

- The modifications that we must make to our analysis come in the following forms:
  - The required reserve ratio is not precisely set.
  - Leakages other than those to excess reserves occur.
  - Business is not always willing to borrow.
- The required reserve ratio is based on the level of prime assets to be held by banks against their liabilities. This is reflected in a prime assets ratio (PAR).
- Under current arrangements, the PAR is not set at a specific level. Rather it reflects a process of negotiation between APRA and each bank, culminating in the development of a liquidity management policy by the bank. The board of the bank and its management are responsible for determining the level of prime assets held, in line with the bank's liquidity policy. Currently, banks maintain a PAR of around 5.5 per cent.
- Other leakages of money from the banking system include currency drains, transfers of deposits to non-bank financial institutions, and the holding of excess reserves by the banks. Banks may also not be able to expand their lending—and the money supply—if business lacks the confidence to borrow.
- The effects of banks on credit creation are of more than passing interest. These may be a factor that contributes significantly to business fluctuations. By holding back on credit expansion as the economy begins to slip into a depression, the banks may further inhibit aggregate demand and intensify that cyclical downswing. Conversely, by lending and thereby creating credit to the maximum of their ability during prosperity, banks may contribute to an excess of aggregate demand and to the resulting inflationary pressures.

SUMMARY

1 The balance sheet is a summary, taken at a point in time, of the financial position of a firm. It is based on the accounting identity. This states that:

assets = liabilities + net worth

The balance sheet of a bank must, by definition, balance, just as it must for any other firm.

2 Assets are items of economic and financial value to the bank due to the incomes that they provide or help generate. Liabilities represent the financial claims of creditors—particularly depositors—against the bank's assets. Net worth is a residual that ensures the balance sheet balances. Net worth represents the net value of the financial claims of the bank's owners against the bank's net assets.

3 Individual banks may 'create' money in two distinct ways. The first is through the generation of deposits, or bank money, when they make loans. The second is through the generation of deposit accounts against the purchase of bonds. Individual banks 'destroy' money when loans are recalled. Money is

also 'destroyed' when these deposits generated against loans or the purchases of bonds are withdrawn.

4 Excess reserves (E) represent a margin of free liquidity above the target or required reserves held by the bank to ensure that it has sufficient liquidity to maintain its operations. It is the level of these excess reserves that determines the ability of a single bank to create money by lending. Cheques drawn by borrowers against these deposits are usually deposited in other banks. Thus the lending bank suffers a loss of excess reserves and deposits equal to the amount that it has lent.

5 The banking system as a whole can lend by a multiple of its excess reserves because even though individual banks can lose reserves to other banks in the system, the banking system cannot lose reserves. The retention of excess reserves within the banking system provides the basis for the banking system to create deposit money (D) by a multiple of the value of the excess reserves present in the system. The multiple by which the banking system can lend is the reciprocal of the target or required reserve ratio, $\frac{1}{R}$, and is known as the monetary multiplier (m).

6 An increase in excess reserves held in the system will lead to an increase in the level of deposits. This increase in deposits is equal to the initial value of excess reserves multiplied by the multiplier. Alternatively:

$$\begin{matrix}\text{maximum current} \\ \text{deposit expansion } (D)\end{matrix} = \text{excess reserves } (E) \times \text{monetary multiplier } (m)$$

7 As well as indicating the deposit-increasing impact of an inflow of excess reserves into the banking system, we should note that the multiple credit expansion process is reversible. If reserves are withdrawn, this will lead to a multiple reduction in the level of deposits and, hence, the supply of money.

8 Modifications that must be made to our simple analysis of the monetary multiplier come in the following forms:
- In Australia the required reserve ratio is not precisely set, but is part of an overall negotiated liquidity plan.
- Leakages from the banking system other than those to excess reserves occur.
- Business is not always willing to borrow.

9 Under current arrangements, the prime assets ratio (PAR) held by each bank reflects a process of negotiation between the Australian Prudential Regulation Authority (APRA) and each bank. Each bank is required to develop an approved liquidity management policy. The board of the bank and its management are responsible for determining the level of prime assets held, in line with the bank's set liquidity policy. Currently, banks maintain a PAR of around 5.5 per cent.

10 Other leakages of money from the banking system include currency drains to the public due to their holdings of cash; transfers of deposits to non-bank financial institutions to support their lending and cash requirements; and the holding of excess reserves by the banks. For the banks to expand the money supply through lending, business must have the confidence to borrow the available funds.

11 The role of banks in the credit creation process may be a factor that contributes significantly to business fluctuations. By lending to the maximum of their ability during prosperity—reducing their excess reserves to a

minimum—banks may contribute to an excess of aggregate demand and to inflationary pressures during recovery and boom in the business cycle. Conversely, by holding back on credit expansion as the economy begins to slip into a depression, due to concerns about their own liquidity and profitability, the banks may further inhibit aggregate demand and intensify that cyclical downswing. Thus the financial instability inherent in banks' ability to change the levels of their excess reserves, and hence their lending ability, may magnify the real fluctuations in output and employment observed in the economy.

KEY TERMS *and* CONCEPTS *to remember*

actual and excess reserves	368	leakages	380
assets	366	liabilities	366
Australian Prudential Regulation Authority (APRA)	378	net worth	366
balance sheet	366	prime assets	379
capital adequacy	380	prime assets ratio (PAR)	378
deposit, credit or monetary multiplier	376	required reserves	368
		required reserve ratio	368
		vault cash or till money	367

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 Why must a balance sheet always balance? What are the major assets and claims on a bank's balance sheet?

2 Why is the required or target reserve ratio important in determining the structure of a bank's balance sheet? Explain.

3 Why are banks required to have reserves? What are excess reserves? How are they calculated? What is their significance to a single bank? Explain.

4 'When a bank makes loans, it creates money; when loans are retired, money is destroyed.' Explain. In what other way might a single bank create money?

5 'Whenever currency is deposited in a bank, cash goes out of circulation and, as a result, the supply of money is reduced.' Do you agree? Explain.

6 With respect to excess reserves, in what way does the banking system differ from a single bank? What is the significance of this difference to the creation of money?

7 Explain why a single bank can safely lend only an amount equal to its excess reserves, but the banking system can lend by a multiple of its excess reserves. Why is the multiple by which the banking system can lend equal to the reciprocal of its required reserve ratio?

8 In Australia liquidity (reserve) requirements are set by negotiation and not at a set amount. Of what significance is this to our ability to determine the size of the money multiplier? Explain.

9 What important roles does the Australian Prudential Regulation Authority (APRA) play in Australia? Briefly outline these roles.

10 What are 'leakages'? How might they affect the money-creating potential of the banking system and the value of the money multiplier? Be specific.

11 In what sense may the banking system be a major potential source of economic instability? Explain.

Problems & exercises

1 Assume that Jones deposits $500 in currency in the Wahoo Bank. Half an hour later, Smith negotiates a loan for $750 at this bank. By how much and in what direction has the money supply changed? Explain.

2 Suppose the National Bank of Commerce has excess reserves of $8000 and outstanding deposits of $150 000. If the reserve ratio is 20 per cent, what is the size of the bank's actual reserves?

3 Suppose the Continental Bank has the simplified balance sheet shown below. The reserve ratio is 20 per cent.

(a) What is the maximum amount of new loans that this bank can make? Show in column 1 how the bank's balance sheet will appear after the bank has lent this additional amount.

(b) By how much has the supply of money changed? Explain.

(c) How will the bank's balance sheet appear after cheques drawn for the entire amount of the new loans have been cleared against it? Show this new balance sheet in column 2.

(d) Answer questions (a), (b) and (c) on the assumption that the reserve ratio is 5 per cent.

Assets $		(1)	(2)	Liabilities and net worth $		(1)	(2)
Reserves	22 000			Deposits	100 000		
Bonds	38 000						
Loans	40 000						

4 Suppose this is a simplified consolidated balance sheet for the banking system. All figures are in millions. The reserve ratio is 5 per cent.

Assets $		(1)	(2)	Liabilities and net worth $		(1)	(2)
Reserves	52			Deposits	200		
Bonds	48						
Loans	100						

(a) How much excess reserves does the banking system have? How much can the banking system lend? Show in column 1 how the consolidated balance sheet would look after this amount has been lent.

(b) Answer question (a) on the assumption that the reserve ratio is 10 per cent. Explain the resulting difference in the lending ability of the banking system.

5 The Yarloo Bank has reserves of $20 000 and deposits of $100 000. The reserve ratio is 20 per cent. Households deposit $5000 in currency in the bank. This $5000 is added by the bank to its reserves. How much excess reserves does the bank now have?

6 Suppose again that the Yarloo Bank has reserves of $20 000 and deposits of $100 000. The reserve ratio remains at 20 per cent. The bank now sells $5000 in bonds to the Reserve Bank, receiving a $5000 increase in reserves in return. How much excess reserves does the bank now have? Why does your answer differ from the answer to the previous question?



1 As well as increasing the access of business to funds during an economic expansion, banks will increase their consumer lending. In which particular markets will this have a major impact? Find some examples. Do you think that this makes these markets more susceptible to changes in the cost and availability of credit?

2 When was the Australian Prudential Regulation Authority (APRA) formed? Which financial institutions does APRA regulate? What are some of the key factors that APRA examines when considering the liquidity and capital positions of banks and other financial institutions? List APRA's major functions. List the major areas that APRA considers in determining the appropriateness of each bank's liquidity management policy. Visit APRA's website at:
http://www.apra.gov.au/

3 Which institution was responsible for prudential supervision of the banking sector before this became APRA's responsibility?

NOTES

1 Although this example is reasonable for illustration, remember that in Australia competition from the relatively few large banks would make such a small venture unrealistic.

2 In practice, of course, any two banks will have many thousands of cheques drawn against each other. These cheques are exchanged on a daily basis. The bank that receives its own cheques to a greater value than the cheques it returns to the other bank has to settle the difference. This is done by drawing a cheque, in favour of the other bank, on the bank's exchange settlement account at the Reserve Bank (see Chapter 10).

3 In transaction 3, deposits were created, but only by currency going out of circulation. Hence, there was a change in the composition of the money supply but no change in the total supply of money.

4 Qualification—if some of the cheques written on a loan are redeposited in the lending bank by their recipients, then that bank will be able to lend an amount somewhat greater than its initial excess reserves.

5 Specifically, in our $m = \frac{1}{R}$ monetary multiplier, we now add to R, the required reserve ratio, the additional excess reserves that bankers choose to keep. For example, if banks want to hold additional excess reserves equal to 5 per cent of any newly acquired deposits, then the denominator becomes 0.25 (equal to the 0.20 reserve ratio plus the 0.05 addition to excess reserves). The monetary multiplier is reduced from 5 to $\frac{1}{0.25}$, or 4.

A LAST WORD DIGITAL CASH STILL SLOW ON THE UPTAKE

The survival of banks as we know them today depends partly on their ability to adapt to and create new financial technology. Digital cash, an often talked about but rarely implemented financial service, has not been adopted at the speed envisioned by its proponents. But, is digital cash money?

Cash has undergone a few changes in the 4000 or so years since it was introduced, but none on the scale that is expected in the electronic commerce phenomenon. The commercial world began to appreciate the potential of the Internet about three years ago. Perceptions of a need for electronic cash resulted in a wave of competing digital payment schemes. Several 'digital cash' pioneers went public amid high expectations that their technology would become the global standard.

But something happened on the way to the electronic shopping mall. Today, there are few takers for digital cash, as the market performance of the pioneers, CyberCash, First Virtual and Wave Systems Inc, attests. Together, they have taken in about $US3 million of business and their market valuation has fallen by more than $US1.2 billion. The trials and tribulations of many digital cash companies have prompted investors to ask whether there is a role for them. Despite the slow start, most industry specialists think there is. Robin Townend, a commentator on electronic commerce, says: 'This is a big subject, and it is early days. But the bottom line is that if electronic commerce is to be successful we will need secure digital cash to operate over public networks. We are witnessing with digital cash the next change in the metamorphosis of money.' But there is a deep-rooted resistance to the rise of digital cash. At the outset of commercialisation of the Internet, many believed that it would bring about a huge increase in micro-transactions or micro-payments. Instead of paying upfront subscriptions, the consumer pays a few cents for individual items, such as a newspaper article or the hire of a software application, or part of one, only when needed.

In a micro-payment market, digital cash makes sense, because of the economics of processing small credit-card purchases. The problem is that consumers do not seem to be interested ... Publishers of online content, although constantly searching for ways of adding value and charging for their content, seem prepared to offer most of it free of charge. The plan is to attract loyal users and let advertisers subsidise the offerings. Trials of digital cash in the form of the stored-value or 'smart' card, which caters for small transactions, have had unexciting results. The typical take-up is 25 per cent of the forecast rate. The other problem is that established methods of payment seem to be making the transition to the electronic world more smoothly than was expected. Card companies are keen to introduce multipurpose cards, which allow consumers to make high- and low-value purchases, and cards that store a wide range of personal information. Visa International and Card Technologies Australia, which provides the VisaCash stored-value system and smart-card technology, announced last month that they will jointly develop the first contact multiple-application smart card in Australia. The card will have stored-value capability and loyalty functions on a single chip.

Townend says: 'Although more than 60 per cent of all retail payments are cash, it is attractive to convert some of this to digital cash. Tests to date have proved there is a need for a "killer application" and this is what is missing at the moment. However, I think the real driver is the need for security.' ... The corporate affairs director of National Australia Bank, Haydn Park, agrees. The bank, through a series of investments in several countries, has a 5 per cent share of MasterCard's Mondex 'electronic purse' system. Mondex has gained much attention because its system allows consumers equipped with a pocket-sized device to conduct transactions with each other, rather than going through a bank. 'It's the closest thing you have to cash in an electronic world,' Park says.

Meanwhile, thousands of banks, merchants and credit-card companies are testing numerous generic electronic cash alternatives. Geoff Gander, a director of the smart-card equipment manufacturer Intellect, says the successful digital cash providers will be those that offer consumers an easy transition to the electronic marketplace.

One possibility is First Virtual's Internet payment system, which allows a consumer to make purchases on the Net without disclosing a credit-card number.

The purchase is charged to the customer's VirtualPIN, an alias for the credit card. Once the transaction is confirmed by the buyer through email, First Virtual charges the customer's credit card on secure, established financial networks.

Townend says: 'Do you get rid of your bank notes and coins? Absolutely not. Hard-cash substitution will take a long time. I remember when Danmont [the first national stored-value card program, in Denmark] was launched. Their business case was predicted on a 1 per cent cash substitution after the first seven years of operation, which demonstrates that we need to take a long-term view.'

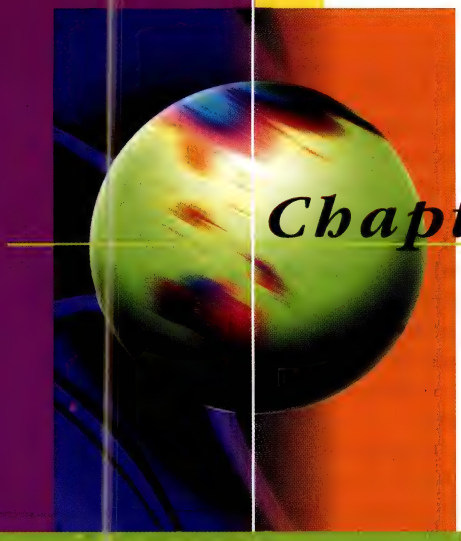
SOURCE: Sandy Plunkett, Business Review Weekly, *9 June 1997.*

Questions

1 Is digital cash really cash—that is, an actual replacement for notes and coins? Alternatively, does digital cash simply provide an alternative method for the transfer of money (this would make its use analogous to the use of such methods for transferring funds as debit cards)? Discuss these issues and make cases for and against each possible interpretation of digital cash.

2 What are the implications of digital 'cash' for the banks' control of the method of payment in most economies? What does this imply for the financial system and the institutions that are most important in it in general?

3 If digital cash becomes a reality, at least to the degree sought by its proponents, what types of companies will become the new 'bankers'? What does this imply for the prudential role and effectiveness of government institutions such as the Australian Prudential Regulation Authority? Explain.



Chapter 12 MONETARY POLICY

INTRODUCTION

In Chapter 11 our attention was focused on the money-creating ability of individual banks and the banking system. Our discussion ended on a disturbing note—totally unregulated banking and the potential for financial instability that this implies might contribute to cyclical fluctuations in real business activity; that is, banks will find it profitable to expand the supply of money during inflationary prosperity and to restrict the money supply through changes to the level of excess reserves they hold in seeking liquidity during depression. It is the task of this chapter to see how the monetary authority of Australian capitalism—the Reserve Bank of Australia (RBA)—can attempt to influence monetary conditions and thus achieve a reversal of the pro-cyclical tendencies of the banking system.

LEARNING OBJECTIVES

- **Discuss the objectives of monetary policy.**
- **Describe the roles of the participating institutions, and the route by which monetary policy affects the operation of the economy.**
- **Examine the balance sheet of the RBA, through which monetary policy is largely implemented.**
- **Analyse the techniques of monetary policy—the major instruments and how they function.**
- **Describe the impact of financial deregulation on the conduct of monetary policy.**
- **Discuss the cause–effect chain through which monetary policy functions, and evaluate its effectiveness.**
- **Using the aggregate demand – aggregate supply framework, examine monetary policy in an open economy.**
- **Provide a restatement of employment theory and policy.**

OBJECTIVES OF MONETARY POLICY

Fundamental objective of monetary policy: to assist the economy in achieving a full-employment, non-inflationary level of total output.

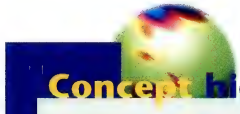
Monetary policy: influencing the economy's interest rates and credit availability to assist in the stabilisation of real GDP, employment and the price level.

Before analysing the techniques through which monetary policy is put into effect, it is essential that we clearly understand the objectives of monetary policy and locate the institutions responsible for the formulation and implementation of that policy.

Certain key points made in Chapter 10 merit re-emphasis at the outset of our discussion. The Reserve Bank of Australia (RBA) has the responsibility of managing monetary policy. The **fundamental objective of monetary policy** is to assist the economy in achieving a full-employment, non-inflationary level of total output. Inflation is thus a key target of monetary policy, and the RBA has an inflation target rate that allows the average rate of inflation to lie in the range of 2–3 per cent per annum. Monetary policy is set in a forward-looking fashion to try to meet this objective over the medium term.

Monetary policy consists of influencing interest rates and credit availability for the purpose of stabilising growth in aggregate output and employment and hence in the price level. More specifically, monetary policy may entail reducing interest rates and encouraging an increase in the availability of credit just prior to and during a recession to stimulate spending and, conversely, increasing interest rates and encouraging the restriction of the availability of credit just prior to and during a boom to constrain spending and inflation.

Note that there are a number of interpretations of how monetary policy works. Some of these alternative views about monetary policy are discussed in Chapter 13.



Concept highlights

- Monetary policy represents actions by the RBA that influence interest rates and credit availability to stabilise aggregate output, employment and the price level.
- The fundamental objective of monetary policy in Australia is to assist the economy to achieve a full-employment, non-inflationary level of total output.
- The RBA has an average inflation target-rate range of 2–3 per cent per annum, reflecting this objective.

CAUSE–EFFECT CHAIN OF MONETARY POLICY

Precisely how does monetary policy work toward the goal of full employment with price level stability? The process is somewhat complicated, but essentially it is as follows.

CASH RATE

The RBA establishes the cash rate—the price, or interest rate, charged for exchange settlement account funds—in line with its view of inflationary pressures within the economy.

OTHER SHORT-TERM INTEREST RATES

Because of the relationship between the cash rate and all other short-term interest rates, the cash rate sets the cost of short-term funds for the banks. Hence, it strongly influences the interest rate at which bankers are willing to make credit

available to borrowers. Changes to the cash rate may also influence the amount of credit that banks are willing to provide, by influencing their decisions on the holding of excess reserves.

AGGREGATE DEMAND

Easy money policy: RBA actions designed to reduce the cash rate, lowering the cost and increasing the availability of bank credit, in order to expand spending and real GDP.

Tight money policy: RBA actions designed to increase the cash rate, increasing the cost and reducing the availability of bank credit, in order to constrain spending and reduce inflationary pressures.

Changes in the cost and availability of bank credit in turn have an impact on the spending decisions of society, particularly on investment decisions, and therefore on the levels of output, employment, income and prices. This cause–effect chain between monetary policy and output and employment may be summarised as follows: federal monetary policy influences the interest rate (the cost) and the availability of bank credit, which influences investment spending, output, employment and the price level.

Let us examine the operation of monetary policy through a simple example. Suppose the economy is operating below the full-employment level of real domestic output. Sidestepping troublesome complications and qualifications for the moment, we find that monetary policy would work something like this:

1. The RBA pursues certain policies designed to *decrease* interest rates, and to encourage the quantity of bank credit (money) taken by borrowers and supplied by lenders to *increase*.
2. Low interest rates and the ready availability of bank credit induce increases in spending. These increases are subject to the multiplier effect, driving the equilibrium GDP upwards by a multiple of the increase in total spending.

These two points have detailed the ideal operation of an **easy money policy**. A **tight money policy** follows the same route, but the procedure is to raise the cost and lessen the availability of bank credit, and so curtail spending. Tight money should obviously be invoked when an excess of total spending is causing inflation in the economy.

MONETARY POLICY AND INVESTMENT

Economists are in general agreement that the investment component of total spending is relatively more sensitive to changes in interest rates than is a substantial component of consumer spending.

It is quite true, of course, that consumer purchases of items such as cars—which are heavily dependent on credit—are sensitive to interest rates. However, it is not clear whether decreases in interest rates tend to increase or decrease the amount of non-durable consumption expenditures. On the one hand, a lower interest rate may induce some households, particularly those operating small businesses, to save less because it is now cheap to finance by borrowing. On the other hand, those who save to provide a given retirement income or to accumulate funds for the education of their children will find that a lower rate means a larger volume of saving is required to earn the needed income. Additionally, those whose income is dependent on the interest earned on interest-bearing financial assets will suffer a fall in their incomes, often reducing their consumption. Thus, overall, the interest rate does not seem to be the crucial factor in determining how the household sector in aggregate divides its disposable income between consumption expenditures and saving.

The impact of changing interest rates on investment expenditures, however, is significant. This is because of the size and long-term nature of such purchases. Capital equipment, factory buildings, warehouses and so on are tremendously expensive purchases. In absolute terms the interest charges on funds borrowed for these purchases will be considerable. An increase in the cost of funds that

may be borrowed to finance investments of this nature will reduce both the net cash flows expected to result from the investment and the estimated current value of these cash flows. Increases in interest rates will mean that for some investment alternatives the cost of borrowed funds will exceed the return available on the investment. Thus increases in interest rates reduce the quantity of investments that are economically viable. Similarly, the interest cost on a house—a consumer durable—purchased on a long-term contract will be very large. A 0.5 per cent change in the interest rate could easily amount to thousands of dollars on the total cost of a home.

It is important to note as well that changes in the interest rate may affect investment spending because they alter the relative attractiveness of capital equipment and bonds. If the interest rate rises on bonds, then, given the profit expectation on capital good purchases, businesses are more inclined to use business savings to purchase securities than to buy capital equipment. Conversely, given profit expectations on investment spending, a fall in the interest rate makes capital purchases more attractive than bond ownership. In short, the impact of changing interest rates through the channel of investment spending acts upon output, employment and the level of prices.

So much for the objectives of monetary policy and the cause–effect chain that its application entails. We now seek a detailed understanding of the techniques by which the RBA can manipulate the cost of credit in the economy. To do this, we need to understand the composition of the RBA's balance sheet and to explain the relationships that exist between interest rates of different durations as expressed in the yield curve.

Concept highlights

- The cause–effect chain between monetary policy and economic activity links a number of elements: the cash rate; bank cost of funds; the cost and availability of credit; and interest-sensitive expenditures, primarily in the form of investment.
- Monetary policy is enacted through the setting of the cash rate. The cash rate influences the cost of funds to the banks and hence the interest rates (the cost) charged on bank credit. Changes in the cost and availability of bank credit influence interest-sensitive spending, and hence output, employment and the price level.
- Interest-sensitive expenditures consist mainly of investment expenditures but also include expenditures on consumer durables such as houses and cars. Increases in interest rates reduce the viability of many investments and hence the quantity of investment likely to be undertaken.
- Increases in interest rates may also increase the attractiveness of purchasing financial assets such as bonds, in preference to making investment expenditures.

BALANCE SHEET OF THE RESERVE BANK OF AUSTRALIA AND THE ROLE OF EXCHANGE SETTLEMENT ACCOUNTS

Because monetary policy is implemented by the RBA, it is essential to consider the nature of its balance sheet. Some of the assets and liabilities found here are considerably different from those found on the balance sheet of a bank. Table 12.1 is a balance sheet that shows all the pertinent assets and liabilities of the RBA as of December 1999.

The assets and liabilities reflect the functions of the RBA. We will simply point to the major items appearing in Table 12.1.

Table 12.1 Balance sheet of the Reserve Bank of Australia, December 1999 (average of weekly figures)

Assets ($ million)		Liabilities ($ million)	
Gold and foreign exchange	36 099	Capital and Reserve Bank reserve fund	2 869
Treasury notes	398	Special reserve (IMF special drawing rights)	0
Other government securities	13 200	Notes on issue	26 000
Loans advances and bills held	57	Deposits of Australian banks	2 125
Clearing items	1 216	Deposits of overseas institutions	158
Other assets	520	Deposits of governments and instrumentalities	9 963
		Other liabilities	10 375
Total assets	**51 490**	**Total liabilities**	**51 490**

SOURCE: Reserve Bank of Australia, Bulletin, *January 2000.*

ASSETS

Two major types of asset can be identified. The first is gold and foreign exchange, comprising gold, special drawing rights and foreign exchange holdings, all translated into Australian dollars. These items are clearly the RBA's major assets, accounting for just over 70 per cent of its total assets in December 1999, and form the major component of Australia's international reserves. The second major type of asset is Australian government securities (including Treasury bills and notes). These account for just over 26 per cent of the total assets of the RBA. Although these assets are a source of income to the RBA, they are not bought and sold primarily for income. Rather, as we shall see later, they are mainly bought and sold to influence the size of banks' reserves and therefore their ability to create money by lending.

LIABILITIES

The largest single liability of the RBA is clearly Australian notes on issue—accounting for just over 50 per cent of total liabilities in December 1999. Other important accounts held with the RBA are those of the government sector and the deposits of Australian banks. The deposits of Australian banks mainly take the form of **exchange settlement account (ESA)** funds, which play an important role in monetary policy.

CHANGES IN ESA FUNDS

The previous description of the cause–effect chain of monetary policy has, for simplicity, ignored several complexities associated with the actual process of conducting monetary policy. For ESA funds, the most important of these are:

1. the impact of flows of funds to and from government accounts
2. the need for banks to maintain a positive balance in their ESAs with the RBA.

Transactions associated with the ESAs occur within the **payments system** (see Chapter 10). The payments system is also used by the banks to clear

cheques and other transfers of funds between themselves, reflecting the millions of dollars of private transactions undertaken each day in the economy.

As previously noted, government accounts constitute an important set of liabilities for the RBA. What is not apparent from the size of these accounts, however, is the importance of government transactions to the level of liquidity in the financial sector. Each day millions of dollars flow through these accounts. Cheques are drawn on bank deposits with the RBA and deposited in government accounts in payment of tax liabilities; thus the total level of reserves held in banks' ESAs falls. Transfers from the government accounts into the banks' deposits with the RBA occur through the payment of welfare benefits; thus banks' reserves in their ESAs rise. The net result at any point in time may be a tendency to either a surplus or deficit, in total, on the banks' ESAs, and a decrease or increase in demand for ESA funds by the banks.

BANKS' MANAGEMENT OF ESA FUNDS

Banks are required to maintain their ESAs in positive balance under the real-time gross settlement (RTGS) system, but exchange settlement accounts held with the RBA earn relatively low returns (see Chapter 10). If a bank finds its ESA going into deficit, it must deposit additional funds into the account. To achieve this, a bank has a number of options. It may borrow funds from banks with surpluses in their ESAs, or it may sell to the RBA some of the government securities held as part of its prime assets. Each of these actions allows the bank to add an immediate credit to its ESA to eliminate its deficit. However, where the bank chooses to sell government securities from its prime assets to the RBA on an intra-day basis through the use of a **repurchase agreement** (**repo** or **RP**), it is required to reverse that transaction by the end of the day. Repos account for about 90 per cent of the RBA's transactions related to ESA funds.

Repurchase agreements (repos or RPs): agreements detailing the prices, timing and conditions under which the banks and the RBA may exchange government securities.

A repo is very much like a loan against which an asset is held to provide security to the lender. When the RBA buys a repo, it pays ESA funds to a bank and receives ownership of the security—note or bond—against which the repo is written. At the end of the agreed date of the repo, the bank is required to purchase the security back from the RBA at an agreed price. This reduces the bank's ESA funds. The difference between the price paid at the beginning and the price paid at the end of the repo implies an interest rate—the discount rate. The sale of a repo by the RBA will have an opposite effect to that of a purchase.

We have now seen that there may be considerable variability in the level of demand for ESA funds in the payments system. As we will see later in this chapter, in its conduct of monetary policy the RBA must smooth out the potential imbalances suggested by changes in demand for ESAs.

Concept highlights

- In terms of monetary policy, the most important assets of the RBA are gold, foreign reserves and government securities. The basic liabilities are the deposits of the various levels of government (particularly the Commonwealth government), deposits of Australian banks and notes on issue.
- Deposits of banks largely reflect balances in their exchange settlement accounts (ESAs). These accounts must be kept in positive balance throughout the day. To achieve this, banks may borrow funds from other banks, or trade in either government securities or repurchase agreements (repos).
- Balances in ESAs shift, reflecting a number of demand and supply factors. These include inflows and outflows of funds associated with such transactions as Commonwealth welfare payments and tax collections. These transactions tend to affect the holdings of the banking system as a whole.

Global SNAPSHOT OFFICIAL DISCOUNT RATES

The discount rate provides the key indicator of the stance of monetary policy in Australia and many other countries. Here we provide data on the discount or cash rate in a number of countries in our region and around the globe.

Country	Average cash rate (1998)
United States	4.5
Canada	5.3
Australia	5.0
Japan	0.5
New Zealand	5.6
Norway	9.0
Indonesia	38.4
South Africa	19.3
China, mainland	4.6
China, Hong Kong SAR	6.3
Pakistan	16.5
Philippines	12.4
Thailand	12.5

SOURCE: International Monetary Fund, International Financial Statistics, *December 1999.*

Questions

1 Based on the discount or cash rate, in which countries does it appear that monetary policy was tight in 1998?
2 What factors might affect your interpretation of the nominal cash rate as an indicator of the stance of monetary policy? Explain.
3 For what purposes might the monetary authority use increases in the cash rate? Explain, indicating the variables that may be the target of monetary policy.
4 What events may have been associated with the high levels of cash rates in many Asian countries in 1998?

THE YIELD CURVE

Students are sometimes puzzled by the frequent focus on the interest rate in their economics courses. 'Surely,' they ask, 'there is more than one interest rate?' This is of course true. We have a spectrum of interest rates; that is, we face a **yield curve**. This yield curve is simply a summary of the interest rates that apply at any given point in time to interest-bearing securities—bills, notes and bonds—of similar credit risk but of different terms to maturity.

Figure 12.1 provides an illustration of a yield curve on 'high-quality' (good credit rating) interest-bearing government securities, as at December 1999. An examination of Figure 12.1 confirms that the cash rate—the focus of the RBA's monetary policy—is at the 'short' end of the yield curve. In fact, it appears at the very beginning of the yield curve.

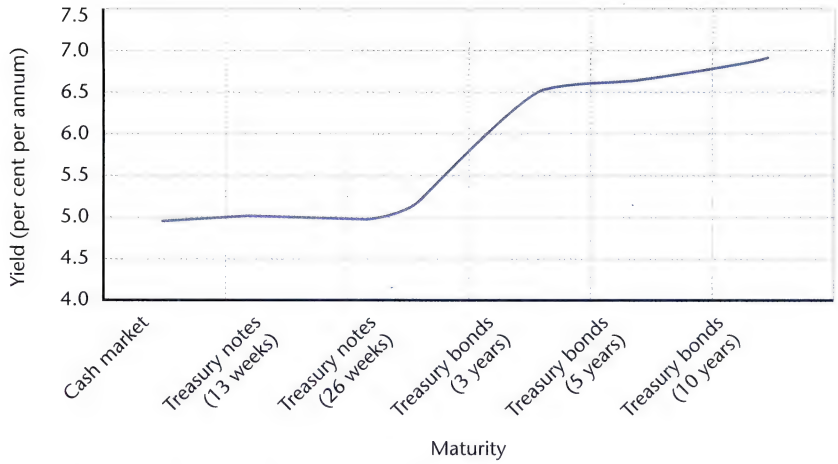


FIGURE 12.1
The yield curve, December 1999

The yield curve provides us with a maturity profile, at a point in time, of the yields paid on interest-bearing securities of similar credit quality across the economy.

SOURCE: Reserve Bank of Australia, Bulletin, *January 2000.*

THE CASH RATE AND OTHER RATES ON THE YIELD CURVE

To understand the link between the cash rate and other rates on the yield curve, we need to recognise that all financial assets provide, at least to some degree, substitutes for other financial assets. Thus we would expect that yields on discounted short-term government securities—securities that can be discounted with the RBA to generate immediate extra liquidity at the prevailing discount rate—would be closely related to the cash rate. In fact, this discount rate, often known as the rediscount rate, is the cash rate—the cost of getting ESA funds.

In turn, other short-dated securities of similarly high credit quality—for example, bank-accepted bills—will have yields that are close to those of short-dated government securities. Thus, changes in cash rates can be expected to flow through very quickly to the yields on financial securities with maturities at the short-dated end of the yield curve.

The importance of this latter feature of the relationship between yields on short-dated financial assets can be seen in the following:

1 Bank bills, inter-bank funds and similar financial instruments provide a substantial proportion of the funds that banks attract and then use to make loans. Their yields therefore constitute a major factor in determining the cost to banks of their supply of funds.

2 Many loans to businesses and consumers are based on variable rates, with these rates being strongly linked to the banks' cost of funds.

3 Any increase in the yield on short-dated funds will flow rapidly through to the rate charged on these business and consumer loans.

But, you may ask, what of loans that have been made over longer maturities and are at fixed rates? How do changes in short-term rates feed into these interest rates? The answer to these questions lies in the way banks conduct their business.

Banks, by nature, transform short-term liabilities into longer-term assets. When considering at which rates to lend funds at fixed rates—often for periods of

between two and five years—banks consider the likely cost of the short-term funds they must draw in on a continual basis to support their longer-term loans. If the cost of these funds rises, and this increase is expected to be maintained over a significant term of the loan, all new fixed-rate loans will carry a higher interest rate. If not, banks would go out of business. Thus longer-term interest rates incorporate expectations about the path of future short-term interest rates.

We may also point to the substitutability of bills, notes and bonds and other financial assets of different maturities. Increases in interest rates on cash and short-dated securities tend to be reflected in higher yields on longer-dated securities with maturities near those of shorter-dated assets. Investors in these instruments—those that supply funds to purchase these assets—demand this. We know this from our study of the asset demand for money; the asset demand for money reflects the opportunity cost of holding it as an asset. An increase in the opportunity cost of holding money in terms of short-term securities must be also be reflected in returns on longer-dated securities or investors would not provide funds into these longer-term markets.

Thus an increase in yields at the short end of the yield curve will flow along the yield curve to longer-term debt instruments. Additionally, rather than make loans, banks may directly purchase other financial assets. If the rate of interest on bonds of different maturities increases, and bonds are a substitute for loans, we can see that the supply of funds available for lending at each maturity will tend to decrease, raising the interest rate on the fixed-term loans.

We have, therefore, a number of complementary explanations for the link between the cash rate and other interest rates in the economy, particularly at the shorter-maturity end of the yield curve.

Concept highlights

- The yield curve is simply a summary of the interest rates that apply at a given point in time to interest-bearing securities of similar credit quality but of different terms to maturity. It thus provides us with a maturity profile of interest rates in the economy.
- We may explain the link between the cash rate and other short-term interest rates in the economy in two complementary ways. The first is to recognise the relationship between the cash rate and the banks' short-term cost of funds. The second is to recognise that all financial assets of similar (close) maturities are substitutable for each other to some degree.
- Changes in the cash rate change the cost of funds for banks. This flows through to a change in the cost of credit—loans—provided by the banks.
- Changes in the price of one financial asset tend to lead to similar changes in the prices of other financial assets with similar maturities. The substitutability of financial assets of close maturities helps to ensure this to at least some degree.

THE TOOLS OF MONETARY POLICY

In our earlier discussion of the cause–effect chain of monetary policy, we pointed out that the RBA establishes the cash rate—the price of ESA funds—in line with its view of inflationary pressures within the economy. It is the level of, and changes in the level of, the cash rate that are the focal points of monetary policy in Australia. Following our discussion of the structure of the RBA's balance sheet, the significance of ESA funds and banks' management of these funds, and

the links between the cash rate and other interest rates on the yield curve, we are now in a position to consider the tools available to the RBA to influence monetary conditions in the economy.

What are the tools that can be employed to influence interest rates in general, and to determine the cash rate in particular? The major tools used by the RBA are:

1. open-market operations (OMOs)
2. using foreign exchange swaps and intervention in the foreign exchange market.

OPEN-MARKET OPERATIONS

Open-market operations (OMOs): the buying and selling of government securities by the RBA in the cash or short-term money market.

Following the deregulation of the Australian financial system during the 1980s and 1990s, the major method by which the RBA may influence monetary conditions in the economy is through its **open-market operations (OMOs)**. The term 'open-market operations' simply refers to the buying and selling of government securities by the RBA—including through repos—in the cash or short-term money market. These purchases and sales are conducted with institutions that are members of the Reserve Bank Information and Transfer System (RITS)—primarily the banks—on the basis of real-time gross settlement (RTGS).

Each morning at 9:30 a.m. the RBA announces its intentions to deal in the market via the market's electronic news services. The RBA, depending on its decision, offers the market one of three alternatives: (1) an offer to buy government securities and repos, allowing the banks to increase their levels of ESA funds; (2) an offer to sell government securities and repos, which will absorb ESA funds from the banks; or (3) a statement by the RBA that it does not intend to deal on that day. However, the RBA retains the right to announce further rounds of dealing throughout the day. All transactions with the RBA are settled on the same day.

What determines the decision of the RBA about whether to buy securities, sell securities or not to deal at all on the day? The RBA's decision is based on its detailed knowledge of the likely shifts in the banks' demands for ESA funds. As a monopoly supplier of ESA funds to the banks, and as the banker to the government, the RBA is able to predict with a high degree of accuracy the needs of the banks for ESA funds.

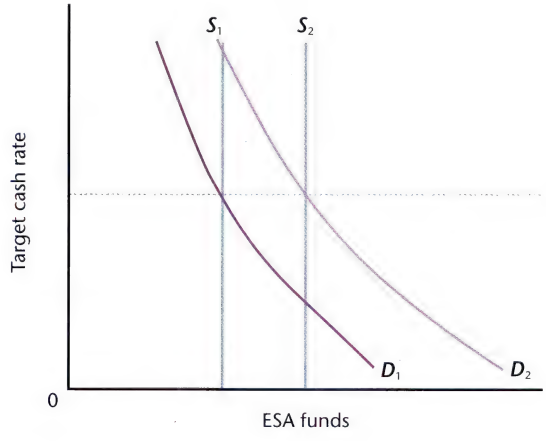


FIGURE 12.2
The market for exchange settlement funds and the cash rate

The target cash rate is the target of monetary policy. The RBA acts as a monopoly supplier of ESA funds to ensure that sufficient ESA funds are available, given shifts in the banks' demands for these funds, to maintain the equilibrium interest rate in the short-term money market at the target cash rate.

The RBA's objective in engaging in OMOs is to ensure that the demand for and supply of ESA funds are kept such that they are in balance at the target cash rate. This is illustrated in Figure 12.2. Assume that the demand by banks for ESA funds is expected to increase on the day due to an outflow of funds from the system brought about by tax payments. This is reflected in a shift of the demand curve for ESA funds from D_1 to D_2. At the higher level of demand, the equilibrium interest rate in the short-term money market would exceed the target rate set for the cash rate by the RBA. Thus it

would need to engage in OMOs to increase the supply of ESA funds from S_1 to S_2, to ensure that its target cash rate is maintained.

On the other hand, assume that the demand by banks for ESA funds is expected to fall on the day due to an inflow of funds from the system brought about by welfare payments. This is reflected in a shift of the demand curve for ESA funds from D_2 to D_1. At the lower level of demand, the equilibrium interest rate in the short-term money market would lie under the target rate set for the cash rate by the RBA. Thus, it would need to engage in OMOs to decrease the supply of ESA funds from S_2 to S_1 to ensure that its target cash rate is maintained.

We can thus see how OMOs may be used to assist the RBA in maintaining its target cash rate.

FOREIGN EXCHANGE SWAPS AND INTERVENTION IN THE FOREIGN EXCHANGE MARKET

A simple model of the determination of the exchange rate was introduced in Chapter 3. Although a detailed examination of the exchange rate will be left to Chapter 18, we need to recognise that the RBA's foreign exchange transactions can have an impact on monetary conditions similar to OMOs. Sales of foreign exchange by the RBA—for example, selling US dollars to buy Australian dollars—will lead to a reduction in the level of ESA funds. To see this, we need only consider the balance sheet of the RBA (Table 12.1). The reduction in the RBA's holdings of foreign exchange, an asset, must be offset by a reduction in its liabilities. In this case the reduction will be to notes on issue. This reduction in notes on issue will flow through to a reduction in the level of bank ESA funds. Thus the sale of foreign exchange has a similar effect on bank reserves to the sale of government securities by the RBA.

Clearly, the purchase of foreign exchange will have an impact on bank ESA funds similar to the purchase of government securities by the RBA. The increase in the RBA's holdings of foreign exchange—an asset—must be offset by an increase in its liabilities. In this case the increase will be to notes on issue, a component of the monetary base. This increase in notes on issue will flow through to an increase in the level of bank ESA funds, and a reduction in their demand for such funds from the RBA.

Given that RBA intervention in the foreign exchange market can have a similar effect to the purchase or sale of Commonwealth government securities, we are left with a dilemma. If the government intervenes in the foreign exchange market, this may operate to offset (or reinforce) the impact of its OMOs. The RBA is left with two choices: to conduct additional OMOs to offset the impact of any intervention in the foreign exchange market—known as *sterilised intervention*—or not to conduct OMOs to offset the impact of any intervention in the foreign exchange market—known as *unsterilised intervention*.

For example, where the RBA wishes to offset the impact of its sale of foreign exchange on the domestic money markets, it must add liquidity back into the monetary system. Sterilised intervention requires the RBA to buy, through its OMOs, sufficient Commonwealth and state government securities to offset the loss of notes on issue due to its sale of foreign exchange. Conversely, where the RBA wishes to offset the impact of its purchase of foreign exchange on the domestic money markets, it must reduce liquidity in the monetary system. Sterilised intervention requires it to sell, through its OMOs, sufficient Commonwealth government securities to offset the increase in notes on issue due to its purchase of foreign exchange.

In those cases where the RBA is using foreign exchange transactions as a supplement to or a substitute for its OMOs, it will use what is referred to

as a **foreign exchange swap**. This involves the exchange of one currency for another, with just a small twist to the way the transaction is constructed. In exchange for the agreement to exchange one currency for another now, the two parties involved agree to exchange the currencies back at a later date and at a specified price. Thus, for example, if the RBA perceives that tax payments will lead to a significant increase in the demand for ESA funds by banks and tend to push the interest rate in the cash market above the target cash rate, it could enter into a foreign exchange swap, selling foreign exchange for Australian dollars now, and agreeing to reverse the transaction at an appropriate date in the future. This would increase the availability of Australian notes and coins, and lead to an increase in the level of the banks' ESA funds (a shift from S_1 to S_2 in Figure 12.2). An advantage of foreign exchange swaps is that they do not affect the value of the exchange rate, unlike direct intervention by the RBA in the foreign exchange market, where its actions alter the supply or demand for the foreign currency.

THE REDISCOUNT RATE AND MONETARY POLICY

The RBA could use the rediscount rate—the rate at which it buys or sells short-dated securities under repurchase agreements—to play a central part in its monetary policy. In a sense, the rediscount rate provides an official interest rate ceiling on the financial sector. Neither the banks nor other participants in the payments system will pay a higher rate of interest on intra-day funds to increase their liquidity because they can always rediscount short-dated government securities with the RBA at this rate.

At present the RBA provides liquidity under intra-day repos without fee.

Concept highlights

- The tools of monetary policy are open-market operations (OMOs), purchases and sales of foreign exchange in the foreign exchange market, and the use of foreign exchange swaps. The RBA may also use its rediscount rate on government securities as a monetary policy tool.
- In each case, monetary policy is used to ensure that the demand for and supply of exchange settlement account (ESA) funds are in equilibrium at the government's target cash rate.
- OMOs involve the purchase or sale of government securities either directly or under repurchase agreements (repos). Repos constitute the bulk of these types of transaction. Sales of government securities or repos by the RBA will lead to a reduction in the supply of ESA funds in the banking system. Purchases of government securities or repos by the RBA will lead to increases in the supply of ESA funds available to the banks.
- Intervention in the foreign exchange market may take the form of purchases or sales of foreign currency in exchange for Australian dollars. A purchase of foreign currency by the RBA will have a similar effect to the purchase of government securities by the RBA. Likewise a sale of foreign currency by the RBA will have a similar impact on banks' ESA funds to that of a sale of government securities.
- The RBA may also use foreign exchange swaps—the exchange of a foreign currency for Australian dollars which is reversed at a later date—to supplement or substitute for its OMOs. An increase in the demand for ESA funds by banks may be countered by entering into a foreign exchange swap that involves selling foreign exchange for Australian dollars now. Similarly, a decrease in demand for ESA funds can be met with a foreign exchange swap that involves selling Australian dollars for foreign currency now.

EASY MONEY AND TIGHT MONEY

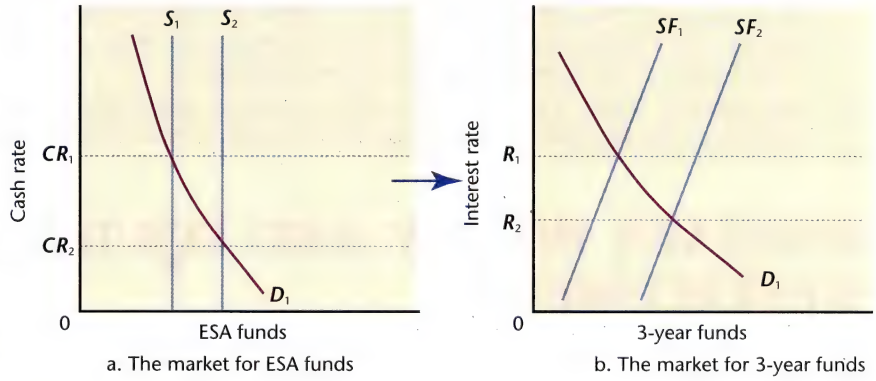
We are now in a position to discuss easy and tight monetary policy.

EASY MONETARY POLICY

Suppose the economy is faced with unemployment and deflation. The monetary authority decides that lower interest rates and an increase in the supply of credit are needed to stimulate the volume of spending in order to help absorb the idle resources. To induce a reduction in the general level of interest rates throughout the financial system and to encourage an increase in the supply of credit, the RBA will *announce* a reduction in the target cash rate. The RBA will then act to bring and maintain the ESA funds market into balance at this new target cash rate. This is illustrated in Figure 12.3(a). Here the RBA has reduced the cash rate target from CR_1 to CR_2.

To ensure that sufficient liquidity is available in the system to maintain this new level of the cash rate, the RBA must supply additional ESA funds to the market. This is represented as a move in the supply curve of ESA funds from S_1 to S_2. This may be done, as discussed in the previous section, through a number of measures. For simplicity, however, we will assume that this action takes the form of sustained increases in the level of purchases of government securities through OMOs and repos.

By maintaining the fall in the cash rate and hence the yield (interest rates) on short-dated government securities, the RBA will cause a flow-on effect in the financial sector. Interest rates on longer-dated government securities and other financial assets will fall. This is shown by a downward shift in the supply curve of three-year funds from SF_1 to SF_2 in Figure 12.3(b), and a lowering of the equilibrium interest rate in this market from R_1 to R_2. As explained previously, this fall in the cost of funds will happen across all markets for funds of shorter-term maturity to at least some degree. Credit will become more cheaply and easily available, owing to an expansion of bank lending as banks become more optimistic about the state of the economy and reduce their holdings of excess reserves (Chapter 11). And with the lower cost and greater availability of funds, the volumes of spending and employment will increase.



a. The market for ESA funds

b. The market for 3-year funds

FIGURE 12.3
Easy and tight monetary policy

In (a), changes in monetary policy are shown through changes to the setting of the target cash rate. An easing of monetary policy results in the RBA acting to maintain the equilibrium interest rate in the cash market at a lower level. A tightening of monetary policy results in the RBA acting to maintain the equilibrium interest rate in the cash market at a higher level. In (b), changes in the cash rate lead to changes in the cost of funds of longer maturity and changes in the equilibrium level of funds exchanged in these markets.

TIGHT MONETARY POLICY

Suppose, on the other hand, an excess of spending is viewed by the RBA as pushing the economy into an inflationary spiral. The RBA should attempt to reduce total spending by increasing interest rates and encouraging a reduction in the supply of credit. To increase the general level of interest rates throughout the

financial system, the RBA will *announce* an increase in the target cash rate and then act to bring and maintain the ESA funds market into balance at this new target cash rate. Referring to Figure 12.3(a), the RBA increases the cash rate target from CR_2 to CR_1.

To ensure that liquidity in the system is only sufficient to maintain this higher level of the cash rate, the RBA must reduce the supply of ESA funds to the market. This is represented as a move in the supply curve of ESA funds from S_2 to S_1. This may be done through sustained decreases in the level of purchases of government securities through OMOs and repos, or through their sale.

By maintaining the rise in the cash rate, the RBA will cause a flow-on effect in the financial sector in a similar way to that discussed under easy money. Interest rates on longer-dated government securities and other financial assets will rise, as shown by an upward shift in the supply of funds curve from SF_2 to SF_1 in Figure 12.3(b). The equilibrium interest rate in this market will rise from R_2 to R_1, with associated increases in all rates across the markets for funds of shorter-term maturity. Credit will become more expensive and difficult to obtain. Bank lending will be affected by the banks' holdings of excess reserves as they become pessimistic about economic conditions. And with the higher cost and lesser availability of funds, the levels of spending—particularly investment—and employment will decrease.

Concept highlights

- Sustained increases in the announced target level of the cash rate indicate a tightening of monetary policy; sustained reductions in the cash rate indicate an easing of monetary policy.
- Easy monetary policy is enacted when the economy appears to be faced with the prospect of substantial unemployment and the presence of deflationary pressures. In implementing easy monetary policy, the RBA announces its intention to reduce the target cash rate, the key indicator of its monetary policy stance. The RBA then acts to bring the ESA funds market into balance—and to maintain the balance—at this new target cash rate, largely through its open-market operations.
- Changes in the cash rate feed through the yield curve to the rates charged on funds and the returns provided on financial assets such as bonds. These will tend to fall, especially at shorter maturities. This alters the cost of funds for investment and other activities, promoting an increase in expenditures and increasing output and employment.
- Tight monetary policy is enacted when the economy is facing significant inflationary pressures. Its operation and impact are the reverse of those associated with easy monetary policy.

MONETARY POLICY AND EQUILIBRIUM GDP: A RESTATEMENT

At the beginning of this chapter, a cause–effect chain through which monetary policy operates was outlined in a simplified fashion. Although not all economists agree with this process, we shall leave debate on this subject until Chapter 13.

You may recall that in locating a given aggregate demand curve we assumed that the monetary authority's interest rate policy was fixed. A decrease in official interest rates shifts the aggregate demand curve rightwards. Lower interest rates and an easier supply of credit permit the economy to purchase a larger real output at any given price level. Conversely, an increase in official interest rates

shifts the aggregate demand curve leftwards. If the economy is in the recession range of the short-run aggregate supply curve, an easy money policy shifts the aggregate demand curve rightwards and has a large impact upon real output and employment with little effect upon the price level. But if the economy is already at, or near to, full employment, an increase in aggregate demand has little or no effect upon real output and employment. It would, however, cause a substantial increase in the price level. Needless to say, an easy money policy would clearly be inappropriate when the economy is at or near full employment. It would be highly inflationary. We are now in a position to restate the suggested cause–effect relationships at a more sophisticated level.

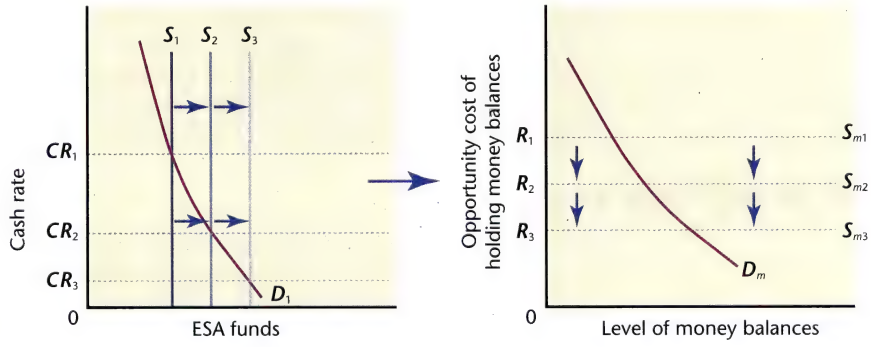
THE MONEY MARKET

Figure 12.4 is the initial focal point for this restatement. Figure 12.4(a) shows the market for ESA funds. Figure 12.4(b) shows the money market including the demand-for-money curve D_m. You will recall from Chapter 10 that the total demand for money comprises the transactions and the asset demands. The transactions demand is directly related to the level of economic transactions, as reflected in the size of the nominal GDP. The asset demand is inversely related to the interest rate. You will recall, too, that the interest rate reflects the opportunity cost of holding money as an asset—the higher the cost, the smaller the amount of money the public wants to hold. In Figure 12.4(b) the total demand for money is related to the interest rate. In this presentation an increase in nominal GDP would shift D_m to the right; a decline in nominal GDP would shift D_m to the left.

We complete our portrayal of the money market by adding the curves representing various possible levels of the money supply—S_{m1}, S_{m2} and S_{m3}. In each case the money supply is shown as a horizontal line, on the assumption that the monetary authority essentially allows the supply of money to accommodate the demand for money, and simply influences the cost at which this occurs through its setting of the cash rate. Our discussion here assumes a constant price level, and the rate of interest portrayed in Figure 12.4 is the real rate of interest.

FIGURE 12.4
Monetary policy and the money market

A decrease in the cash rate flows through to a change in the opportunity cost of holding money balances and alters the level of money held as an asset. Due to the focus of the monetary authority on determining interest rates, the supply of money may essentially be seen as being determined by the level of demand for money. This is illustrated through the simplifying assumption that the supply-of-money curve is horizontal.



a. The market for ESA funds

b. The money market

INVESTMENT

Figure 12.5(a) focuses on the market for investment funds and the supply of these funds. Initially, we find that given the cash rate CR_1—and the associated money market (M_3) interest of R_1—the interest rate in the market for funds is 10 per cent. What is this market for funds? For simplicity of exposition, this market is a generalised representation of all the markets for funds illustrated on

the yield curve. The 10 per cent rate is projected off the investment-demand curve of Figure 12.5(b), as are the interest rates associated with the CR_2 and CR_3 cash rate—8 and 6 per cent respectively. Referring to Figure 12.5(b), we find that at these different interest rates it would be profitable for businesses to invest I_1, I_2 and I_3, respectively.

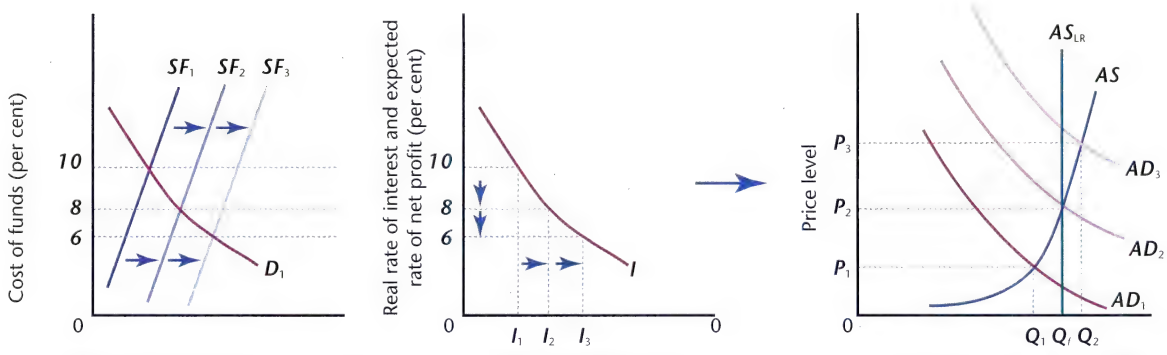


FIGURE 12.5
Monetary policy and equilibrium GDP

An easy money policy lowers the interest rate on funds required for investment and other purposes, increases the investment component of aggregate demand and thereby increases the equilibrium level of GDP. Conversely, a tight money policy raises the rate of interest, reduces the investment component of aggregate demand and restrains demand-pull inflation.

EQUILIBRIUM GDP

Finally, in Figure 12.5(c) our investment expenditures at each interest rate are plugged into the aggregate demand – aggregate supply model to determine the equilibrium GDP. Aggregate demand curve AD_1 is associated with the I_1 level of investment expenditure; aggregate demand curve AD_2 is associated with the I_2 level of investment expenditure; and aggregate demand curve AD_3 is associated with the I_3 level of investment expenditure. Clearly, the lower the interest rate, the higher the level of aggregate demand, and the higher the level of nominal GDP.

EASY MONETARY POLICY

If the equilibrium level of GDP entails unemployment, such as with AD_1, an easy money policy lowers the interest rate, makes a larger volume of investment spending profitable and thereby expands the equilibrium GDP to or at least towards full employment, for example at Q_f. More concretely, if the full-employment GDP is Q_f, an easing of monetary policy reduces the cost of investment funds from 10 to 8 per cent and increases investment from I_1 to I_2, as shown in Figure 12.5(b). By increasing aggregate demand to AD_2, this increase in investment expenditure increases equilibrium GDP from Q_1 towards the desired Q_f level.

TIGHT MONETARY POLICY

Conversely, if the original GDP generates demand-pull inflation, such as occurs with AD_3, a tight money policy increases the interest rate, causes a decline in

investment, and so eliminates inflationary pressures. To illustrate—if the full-employment, non-inflationary GDP is Q_f, planned investment is required to fall from I_3 to I_2 to achieve this output level. Figure 12.5(a) shows that the effect of the increase in the cash rate is to increase the cost of funds (the real interest rate) from 6 to 8 per cent, which reduces investment from I_3 to I_2. This reduces aggregate demand from AD_3 to AD_2, reducing the equilibrium level of output to Q_f, with the price level declining from P_3 to P_2.

REFINEMENTS AND FEEDBACKS

The components of Figures 12.4 and 12.5 allow us to:

1. appreciate some of the factors that determine the effectiveness of monetary policy
2. note the existence of 'feedback' or 'circularity' problems that complicate monetary policy.

POLICY EFFECTIVENESS

Figures 12.4 and 12.5 correctly indicate the directions in which an easy or tight money policy will change the interest rate, investment and the equilibrium GDP. It tells us little about the magnitude of the indicated changes and therefore about the effectiveness of monetary policy. What determines whether a given change in cash rates has a large or a small impact on equilibrium GDP? The answer lies partly in the shapes of the demand-for-money and investment-demand curves. You might pencil in alternative curves to convince yourself that the more inelastic the D_m curve, the smaller the effect of any given change in the cost of money on the asset demand for money. This implies a smaller release of funds for investment purposes and hence a greater upward shift in the supply curve of investment funds. The slope of the money-demand curve reflects the liquidity preferences of the public—the degree to which they value liquidity against the opportunity cost of maintaining that liquidity.

Further, any given change in the interest rate in the market for funds has a larger impact on investment—and hence on equilibrium GDP—the more elastic the investment-demand curve. In other words, a given change in the cash rate is most effective when the demand-for-money curve is relatively steep and the investment-demand curve is relatively flat in the current range of interest rates. Conversely, a given change in the cash rate tends to be relatively ineffective when the money-demand curve is flat and the investment-demand curve is steep in the current range of interest rates. As we shall find in Chapter 13, there is considerable controversy about the precise shapes of these curves.

FEEDBACK EFFECTS

The alert reader may have sensed, in Figures 12.5(a) to 12.5(c), the potential for a **feedback** or circularity problem that complicates and influences the effectiveness of monetary policy. Bluntly stated, the nature of the circularity problem is as follows: interest rates on investment funds, working through the investment-demand curve, are an important determinant of the equilibrium GDP. Now we must recognise that causation also runs the other way. The level of GDP is a determinant of the equilibrium interest rate in the market for funds! This link comes about because the level of GDP affects company profits, which determines company investment plans, which feeds into their demand for investment funds.

How does this feedback from Figure 12.5(c) to 12.5(a) affect monetary policy? It means that the increase in the GDP which an easy money policy brings about will in turn increase the demand for investment funds, tending to offset partially or to blunt the interest-reducing effect of the easy money policy. Conversely, a tight money policy tends to reduce the GDP. But this in turn decreases the demand for investment funds and tends to dampen the initial interest-increasing effect of the tight money policy.

We have one further complication to consider. Figure 12.4(b) suggests that the equilibrium supply of money is largely determined endogenously—the RBA makes it possible for the banks to provide the required level of M_3 at the money market rate determined by the cash rate that it has set. However, the supply curve for money may be upward sloping. If this is the case, increases in the demand for money, brought about by increases in GDP and increases in the demand for investment funds, will lead to a rise in the rate of interest on money. This will act to weaken the effectiveness of an easing in monetary policy. The converse is true for a tightening of monetary policy.

Business IMPLICATION **DEBT AND MONETARY POLICY**



Consumer debt has increased markedly over the late 1990s and into the 2000s. Businesses, which took a more conservative position with respect to their use of borrowed funds to finance investment during the 1990s, have also increased their borrowing levels, although not to the same extent that consumers have chosen to do.

What are the implications of this increased borrowing for the conduct of monetary policy? Monetary policy has become a more powerful tool in the control of aggregate demand. The increased exposure of households and business to increases in interest rates suggests that aggregate demand is more interest-elastic than under situations where borrowing patterns were more conservative. Any increase in interest rates will see the size of households' and business's monthly interest bills soar skyward, and a sharp reduction in new and planned purchases of consumer durables and investment goods. The RBA's interest rate increases should thus be able to be kept at lower levels than in the past, while still having the desired contractionary effect. Businesses need to be aware that even small shifts in the level of interest rates may have big implications for their sales levels, and factor this into their business strategies.

MONETARY POLICY AND THE OPEN ECONOMY

Additional complications arise when we allow for the fact that our economy is a component of the broader world economy.

SHOCKS ORIGINATING FROM ABROAD

As discussed in our examination of fiscal policy in the open economy (see Chapter 9), events and policies abroad that affect our net exports may have a major impact on our economy. Our economy is susceptible to unforeseen international aggregate demand shocks that can alter our GDP and render our monetary policy actions inappropriate. For example, monetary policy may be eased to encourage an expansion of economic activity. At the same time, demand for our exports may grow as the economies of our trading partners recover from recession. The combination of an increase in investment, caused by the fall in interest rates, and the increase in demand for net exports could prove inflationary. Tight, or steady, monetary policy may have been a more appropriate policy to follow in this circumstance.

NET EXPORT EFFECT

The net export effect may work through international trade to increase the effectiveness of monetary policy. Suppose we conduct a tight monetary policy to reduce investment, aggregate expenditure, and hence inflation. The higher interest rate will attract financial capital from abroad where interest rates presumably are unchanged. But foreign financial investors must acquire Australian dollars before purchasing the desired Australian securities. We know that an increase in the demand for a commodity—in this case Australian dollars—raises its price. So the price of Australian dollars will rise in terms of foreign currencies; in other words, the dollar will appreciate.

What will be the impact of this dollar appreciation on our net exports? Because more units of foreign currencies are needed to buy our goods and services, foreigners will see our exports as being more expensive; hence, our exports will decline. Conversely, Australians, who can now exchange their dollars for more units of foreign currencies, will buy more imports. The consequence? Net export expenditures in Australia will diminish, and the effect of our tight monetary policy will be reinforced.

Net export effect: the exchange-rate-induced change in aggregate demand associated with changes in the interest rate.

Table 12.2 summarises the **net export effect** resulting from monetary policy. Specifically, column 1 reviews the analysis just discussed. But note that the net export effect works in both directions. By reducing the domestic interest rate, an easy monetary policy tends to increase net exports. In this regard, you should follow through the analysis in column 2 of Table 12.2 and relate it to the aggregate demand – aggregate supply model.

Table 12.2 Monetary policy and the net export effect

(1) Tight monetary policy	(2) Easy monetary policy
Problem: Inflation	Problem: Recession and slow growth
↓	↓
Tight monetary policy	Easy monetary policy
↓	↓
Higher domestic interest rates	Lower domestic interest rates
↓	↓
Increased demand for Australian dollars	Decreased demand for Australian dollars
↓	↓
Australian dollar appreciates	Australian dollar depreciates
↓	↓
Net exports decline (aggregate demand decreases, reinforcing the effect of tight monetary policy)	Net exports increase (aggregate demand increases, reinforcing the effect of easy monetary policy)

EFFECTIVENESS OF MONETARY POLICY

How well does monetary policy work? Actually, the effectiveness of monetary policy is subject to considerable debate.

SHORTCOMINGS OF MONETARY POLICY

Monetary policy entails a number of limitations and real-world complications.

Cyclical asymmetry

If pursued vigorously enough, tight money can actually destroy bank balance sheets by driving companies that cannot meet their interest obligations to the point of bankruptcy. Banks' confidence to lend will decrease, causing them to increase the reserves they hold. The cost of investment funds will rise, as the supply of investment funds contracts. But an easy money policy suffers from a 'You can lead a horse to water, but you can't make it drink' kind of problem. An easy money policy can do no more than see to it that banks have the ability to make loans. It cannot guarantee, however, that loans will actually be negotiated. If the public does not want to borrow, or if banks, seeking liquidity, are unwilling to lend, the easy money efforts of the RBA will be of little use.

Caution—we are not suggesting that an easy money policy will not work. Rather, the point is that the power of a tight money policy may be greater than that of an easy money policy.

Conflict with Treasury goals

What would happen if the monetary policy recommended by the RBA in fact conflicted with the view of the Treasury? In this case, final power clearly rests with the Treasurer and the federal government. Indeed, the *Reserve Bank of Australia Act* specifies a procedure to be followed if disagreement arises between the RBA and the Treasury. The Treasurer decides final policy, to be enacted by the RBA—although against the latter's advice. The Treasurer is then required to report to both houses of Parliament on the nature of the disagreement and the reasons for overriding RBA advice. This procedure has not had to be used.

Cost-push inflation

As is the case with fiscal policy, monetary policy is designed to control inflation by restraining excess aggregate expenditures; that is, an anti-inflationary monetary policy is geared to alleviate or correct demand-pull inflation, not cost-push inflation, the causes of which lie on the supply or cost side of the market. This issue will reappear in Chapter 14.

The investment impact

Some economists doubt that monetary policy has as much impact upon investment as Figure 12.5 implies. Their position is based upon several points.

First, we have already noted that the combination of a relatively flat money-demand curve and a relatively steep investment-demand curve (around current interest rate levels) means that a given change in cash rates does not elicit a very large change in investment and, hence, in the equilibrium GDP.

Second, the operation of monetary policy as portrayed may be complicated, and at least partially offset, by unfavourable changes in the location of the investment-demand curve. For example, the purpose of a tight money policy is to increase the interest rate, move businesses up the investment-demand curve, and thereby restrain aggregate spending and the rate of inflation. However, the very inflationary prosperity that the tight money policy is designed to control may well be accompanied by increasing business optimism or a rapid rate of

technological progress, which has the effect of shifting the investment-demand curve to the right. This poses the possibility that investment spending will increase despite the higher interest rate. In short, the forces that cause inflation may also generate increases in the demand for investment goods that tend to counter a tight money policy. Conversely, a recessionary environment may undermine business confidence, shift the investment-demand curve to the left, and tend to frustrate an easy money policy.

Finally, large monopolistic firms—the very firms that do the bulk of the investing—are in a position to pass on any increase in interest costs to consumers in the form of higher product prices. Indeed, in many cases monopolistic firms are able to finance substantial portions of their investment programs internally and therefore are not hindered by the lack of availability of credit for investment purposes. However, tight money is likely to have a considerable impact upon smaller firms in competitive industries. This is another criticism of tight money—it may discriminate against small firms.

STRENGTHS OF MONETARY POLICY

Despite these limitations and problems, most economists regard monetary policy as an essential component of our national stabilisation policy. Indeed, several specific points can be made on behalf of monetary policy.

Speed and flexibility

In comparison with fiscal policy, monetary policy can be quickly altered. We have seen (Chapter 9) that the application of appropriate fiscal policy may be seriously delayed by parliamentary deliberations. In contrast, open-market operations are undertaken on a daily basis and so may influence interest rates and credit very rapidly.

Political acceptability

Monetary policy is a more subtle and more politically conservative measure than is fiscal policy. Changes in government spending directly affect the allocation of resources, and, of course, tax changes can have extensive political ramifications. By contrast, monetary policy works by a more subtle route and therefore seems to be more politically palatable.

Business IMPLICATION

PROBLEMS WITH MONETARY TARGETS

The RBA has a 'fight inflation' policy in place, as suggested by its target range for inflation (2 to 3 per cent). But from what sources might this inflation come? Clearly, if economic and employment growth reach high levels, we can expect the rate of inflation to show signs of moving higher. Thus we might reasonably expect the RBA to raise cash rates to slow an 'overheating' economy. But inflation may also come from other sources, even when the 'heat' has gone from the economy. One of the most important of these is from a weakening of the value of the currency.

As the value of Australia's dollar falls, the price of foreign-purchased goods and services will rise. This will lead to the importing of inflation, as Australia is heavily dependent on imports for many of its consumption and investment goods. The result? The RBA may raise interest rates to support the value of the currency, making Australia a more attractive place into which to invest funds in the short term. Thus in our modern world of floating exchange rates, monetary policy, in its fight against inflation, must target both the level of economic activity and the level of the exchange rate. As we well know, it is very hard to hit two targets at once.

Concept highlights

- Like fiscal policy, the goal of monetary policy is to stabilise the economy. Thus its aim is to help us achieve a non-inflationary, full-employment level of real output.
- Our analysis shows that monetary policy operates through a complex cause–effect chain:
  (a) The monetary authority alters the target cash rate in line with its view on the inflationary or recessionary pressures in the economy.
  (b) Changes in the cash rate increase the opportunity cost of holding money (M_3) and alter the cost of investment funds.
  (c) Changes in the interest rate charged on investment funds affect investment.
  (d) Changes in the level of planned investment alter the equilibrium GDP and the price level by changing the level of aggregate demand in the economy.
- There are complications associated with the operation of monetary policy, namely questions of policy effectiveness and feedbacks, and the operation of the net export effect.
- Feedbacks and policy effectiveness refer to the implication of the shapes of the demand-for-money curve and investment-demand curve and the potential for shifts in these curves. The steeper is the demand-for-money curve, the greater will be the required increase in the cost of investment funds for any given increase in the cash rate; the more elastic the investment-demand curve, the greater the impact of monetary policy on investment and hence equilibrium real GDP.
- There is a feedback effect from monetary policy to the demand for investment funds. This occurs through the impact of changes in GDP on company profits and hence their investment plans. Reductions in GDP tend to reduce business profits, causing businesses to revise downwards their planned investment levels. This leads to a fall in the demand for investment funds, which blunts the impact of monetary policy.
- The net export effect reflects the impact of interest rate changes on the value of the currency under floating exchange rates. An increase in interest rates tends to lead to exchange rate appreciation and a fall in net exports. A decrease in interest rates leads to a depreciation of the exchange rate and an increase in net exports. Thus the net export effect acts to reinforce the domestic impact of monetary policy.
- The *shortcomings* of monetary policy include
  - cyclical asymmetry, which implies that while a tight money policy will reduce activity, a lack of confidence in the private sector may reduce the effectiveness of easy monetary policy
  - the potential for conflict with Treasury goals
  - its potential ineffectiveness against cost-push inflation
  - questions about its actual impact on investment.
- The *strengths* of monetary policy are:
  - the speed and flexibility with which it may be implemented relative to fiscal policy
  - its political acceptability due to its broad impact.

REVIEW: EMPLOYMENT THEORY AND POLICY

This is an opportune point at which to recapitulate and synthesise our understanding of employment theory and associated stabilisation policies. We want to gain a better understanding of how the many analytical and policy aspects of macroeconomics discussed in this and the eight preceding chapters fit together.

EMPLOYMENT THEORY

Figure 12.6 provides the 'big picture' we seek. The overriding virtue of this diagram is that it shows how the many concepts and principles we have discussed relate to one another and constitute a coherent and meaningful theory of what determines the level of resource use in a market economy.

Now let us review the substance of Figure 12.6. Reading from left to right, we first deal with the inputs into the aggregate supply curve. Many of these factors are dealt with at greater length in Chapter 16 on economic growth. However, we should note the importance of the operation of the resource markets in determining input prices; the impact of education and training, technology and management on productivity; and the importance of the legal and institutional environment. Several factors, such as the stock of capital and the legal environment, affect more than one area on the aggregate supply side.

Although government may choose to intervene in many areas, our capitalist system emphasises that the major roles for government exist in the control of market power and in establishing the legal and institutional environment in which business is to be conducted.

Now that we have acknowledged the importance of the supply-side factors in determining equilibrium GDP, we can move from left to right to examine the aggregate demand side of our model. From this viewpoint the key, of course, is that the levels of output, employment, income and prices are all directly related to the level of aggregate expenditures. To discover what determines the level of aggregate spending, we must examine its major components:

$$\text{GDP} = C + I + G + NX$$

The absolute level of consumption spending depends upon the position of the consumption schedule and the level of disposable income. Most economists are convinced that the consumption schedule is quite stable. Therefore, the absolute level of consumption spending can usually be thought of as changing in response to changes in GDP that are brought about by fluctuations in other components in aggregate spending. Further, the slope of the consumption schedule, measured by the MPC—the marginal propensity to consume—is critical in determining the size of the multiplier.

Investment spending is a highly volatile component of aggregate expenditures and therefore likely to be a cause of demand-side fluctuations in the levels of output, employment and prices. Note that both fiscal and monetary policy influence investment spending.

The government purchases component of aggregate expenditures differs from consumption and investment in that it is determined by public policy. Consumption and investment decisions are made in the self-interest of the household and business sectors respectively. Government spending decisions, on the other hand, are made, at least in part, to fulfil society's interest in high levels of output and employment and a stable price level.

The difference between exports and imports may also be a fairly volatile aggregate spending component. Imports may be consistently dependent on the level of domestic income and the level of the exchange rate. However, exports will depend upon the level of the exchange rate and the general pattern of changes in the incomes and demands of Australia's trading partners.

FISCAL AND MONETARY POLICY

Fiscal policy refers, of course, to changes in government spending and tax revenues that are designed to eliminate either an inflationary or a recessionary gap.

Figure 12.6 makes the potential stabilising role of government quite evident; government spending, as one of the major components of aggregate spending, directly affects output, employment and the price level. Tax policy, on the other hand, works indirectly through the other two major components of total spending; taxation is a determinant of both consumption and investment. In particular, reductions in personal income tax tend to shift the consumption schedule upwards; tax increases tend to shift it downwards. Cuts in the company income tax or other business taxes tend to improve profit expectations, shift the investment-demand curve to the right, and stimulate investment; tax increases weaken profit expectations and reduce the willingness to invest.

Asian FOCUS

RATE HIKES LIKELY FOR ASIA



Evidence is pointing to the need for, or greater likelihood of, increases in interest rates in the Asian region. There is fear of the potential for inflation to rise as the region recovers from recession.

Higher short-term Korean interest rates are a sign of things to come in Asia and highlight central bankers' dilemma—whether to bear down on inflation through monetary policy or exchange rate policy, economists say.

In announcing that it will guide its overnight call rate to 5 per cent from 4.75 per cent, the Bank of Korea said it was acting not to nip inflation in the bud but to narrow a destabilising gap between short-term rates and bond yields.

But as Asia recovers briskly from the financial crisis, economists said the risks of the external trade-off for policy makers between growth and inflation was shifting.

'Last year was the year of turnaround based on trade surpluses, but people's attention now is beginning to focus, rightly or wrongly, on the inflationary consequences of that,' said Graham Courtney, executive director for Asian economics at Warburgh Dillon Read in Tokyo.

'It may be too early, but attention seems to be moving a little bit away from growth—which is taken as a given—and to inflation,' he said.

No one is forecasting sharply higher interest rates: output has not yet regained pre-crisis levels, excess industrial capacity still has to be worked off and borrowing costs need to be held down to nurse weak banking systems back to health ...

... Some economists believe that structural reforms and deregulation in Asia, coupled with the downward pressure that the boom in electronic commerce will put on prices, mean that interest rates will be able to stay lower for longer ...

SOURCE: Alan Wheatley, 'Rate Hikes Likely for Asia', Business Asia, *25 February 2000.*

Questions

1. Do short-term interest rates and bond yields usually differ? What does this imply about the Bank of Korea's statement regarding its monetary policy action?
2. What implication does economic recovery in the Asian region have for the level of these countries' trade surpluses? Explain.
3. What are the implications of rising interest rates for economic growth in Asia?
4. What state does it appear that the region is in, following the financial crisis? Explain the basis for your evaluation.
5. Why might structural reform and deregulation lessen the need for monetary policy in controlling inflation in the short-term future in Asia?

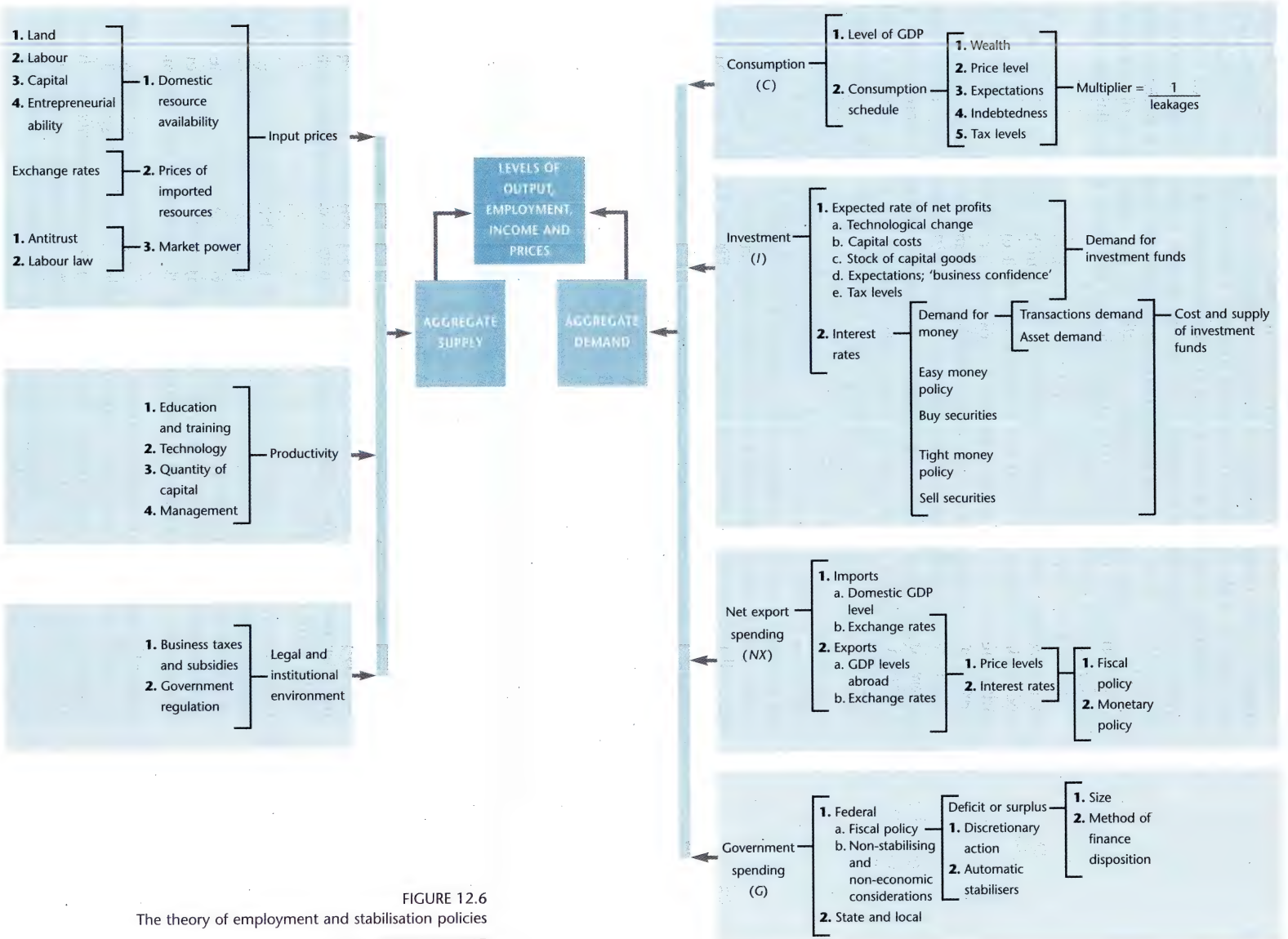


FIGURE 12.6
The theory of employment and stabilisation policies

This diagram integrates the various components of macroeconomic theory and stabilisation policy.

Fiscal policy is both discretionary and automatic. The automatic or built-in stabilisers—the progressiveness of the net tax structure—cause tax collections to vary directly with the level of national income. Discretionary policy consists of the changing of spending levels and the manipulation of tax rates or the tax structure for the explicit purpose of achieving greater stability in the economy. Keep in mind, however, that government expenditure and taxation policy is used not only for macroeconomic stability, but also for the reallocation of resources and redistribution of income. The functioning of monetary policy has just been detailed in the discussion of Figures 12.4 and 12.5.

Although we have treated fiscal and monetary policy separately, they are in fact interrelated and should be coordinated. This can be illustrated by reference once again to Figure 12.5 and the feedback effects it embodies. The quantitative significance of, say, a given increase in government spending depends upon whether it is accompanied by an 'accommodating' change in monetary policy.

Suppose it is determined that the actual GDP is $25 billion short of the full-employment level and that the multiplier is 5. Hence, other things being equal, a $5 billion increase in government purchases will move the economy to full employment. But in fact, other things cannot be expected to remain unchanged as the economy begins to expand under the impetus of the additional demand. As production and GDP expand, the demand for investment funds will tend to increase as businesses become more confident about their prospects for profits. This may drive up interest rates in the markets for investment funds unless banks become much more willing to lend at current interest rates. The higher interest rates will tend to crowd out some investment—see Figure 12.5(b)—and partially offset the expansionary impact of the increase in government spending. Unless monetary policy is eased, the multiplier effect discussed in Chapter 7 will be diminished because of money market feedbacks that curtail investment spending. The point is that fiscal and monetary policies do not operate in isolation; effective stabilisation policy presumes their coordination.

SUMMARY

1 The simple cause–effect chain of monetary policy suggests that monetary policy represents actions by the RBA that influence interest rates and credit availability to stabilise aggregate output, employment and the price level. In practice, this cause–effect chain between monetary policy and economic activity must link a number of elements: the cash rate; banks' cost of funds; the cost and availability of credit; and interest-sensitive expenditures, primarily in the form of investment.

2 Like fiscal policy, the goal of monetary policy is to stabilise the economy. The fundamental objective of monetary policy in Australia is to assist the economy to achieve a full-employment, non-inflationary level of total output. In line with this objective the RBA has an average inflation target-rate range of 2–3 per cent per annum. Monetary policy is enacted through the setting of the cash rate.

3 Interest-sensitive expenditures consist mainly of investment expenditures but also include expenditures on consumer durables such as houses and cars. Increases in interest rates reduce the viability of many investments and hence the quantity of investment likely to be undertaken. Increases in interest rates may also increase the attractiveness of purchasing financial assets such as bonds, in preference to making investment expenditures.

4 In terms of monetary policy, the most important assets of the RBA are gold, foreign reserves and government securities. The basic liabilities are the deposits of the various levels of government (particularly the Commonwealth government), deposits of Australian banks and notes on issue. Deposits of banks largely reflect balances in their exchange settlement accounts (ESAs). These accounts must be kept in positive balance throughout the day.

5 Balances in ESAs shift each day, reflecting a number of demand and supply factors. These include inflows and outflows of funds associated with such transactions as Commonwealth welfare payments and tax collections. These transactions tend to affect the holdings of the banking system as a whole. Monetary policy is used to ensure that the demand for and supply of these ESA funds are in equilibrium at the government's target cash rate. It must therefore be able to accommodate these day-to-day changes in the level of ESA funds.

6 The yield curve is simply a summary of the interest rates that apply at a given point in time to interest-bearing securities of similar credit quality but of different terms to maturity. It thus provides us with a maturity profile of interest rates in the economy. We may explain the link between the cash rate and short-term interest rates on the yield curve in two complementary ways:

- The first is to recognise the relationship between the cash rate and the banks' short-term cost of funds. Changes in the cash rate change the cost of funds for banks. This occurs initially through the impact on the cost of loans on the inter-bank market, and through the impact on the rate at which banks can rediscount government securities or repurchase agreements (repos) with the RBA. This rapidly flows through to a change in the cost of credit—loans—provided by the banks.
- The second is to recognise that all financial assets of similar (close) maturities are substitutable for each other to some degree. Changes in the price of one financial asset tend to lead to similar changes in the prices of other financial assets with similar maturities. The substitutability of financial assets of close maturities helps to ensure this to at least some degree. The substitutability of assets of different but close maturities suggests that investors will shift funds between different segments on the yield curve in response to large imbalances in their relative returns. Similarly, banks will make loans to different maturity sections of the markets for funds to achieve an appropriate level of return on these funds.

7 The tools of monetary policy are open-market operations (OMOs), purchases and sales of foreign exchange in the foreign exchange market, and the use of foreign exchange swaps. The RBA may also use its rediscount rate on government securities as a monetary policy tool. OMOs involve the purchase or sale of government securities either directly or under repurchase agreements (repos). Repos constitute the bulk of these types of transaction. Sales of government securities or repos by the RBA will lead to a reduction in the supply of ESA funds in the banking system. Purchases of government securities or repos by the RBA will lead to increases in the supply of ESA funds available to the banks. Intervention in the foreign exchange market may take the form of purchases or sales of foreign currency in exchange for Australian dollars. A purchase of foreign currency by the RBA will have a similar effect to the purchase of government securities by the RBA. Likewise a sale of foreign currency by the RBA will have a similar impact on banks' ESA funds to that of a sale of government securities.

8 The RBA may also use foreign exchange swaps—the exchange of a foreign currency for Australian dollars which is reversed at a later date—to supplement or substitute for its OMOs. An increase in the demand for ESA funds by banks may be countered by entering into a foreign exchange swap that involves selling foreign exchange for Australian dollars now. Similarly, a decrease in demand for ESA funds can be met with a foreign exchange swap that involves selling Australian dollars for foreign currency now.

9 Sustained increases in the announced target level of the cash rate indicate a tightening of monetary policy; sustained reductions in the cash rate indicate an easing of monetary policy.

10 Easy monetary policy is enacted when the economy appears to be faced with the prospect of substantial unemployment and the presence of deflationary pressures. In implementing easy monetary policy, the RBA announces it intention to reduce the target cash rate, the key indicator of its monetary policy stance. The RBA then acts to bring the ESA funds market into balance—and to maintain the balance—at this new target cash rate, largely through its open-market operations. These changes in the cash rate feed along the yield curve to the rates charged on funds and the returns provided on financial assets such as bonds. These will tend to fall, especially at maturities at the shorter end of the yield curve. The result is that the cost of funds for investment and other activities is lowered by easy monetary policy, promoting an increase in expenditures and increasing real output and employment.

11 Tight monetary policy is enacted when the economy is facing significant inflationary pressures. Its operation and impact are the reverse of that of easy monetary policy.

12 Table 12.3 draws together all the basic notions relevant to the application of tight and easy money policies.

Table 12.3 A summary of monetary policy

I	**Problem:** unemployment and deflation	I	**Problem:** inflation
II	**Remedy:** to induce an expansion of the supply of credit, and therefore spending, by reducing interest rates.	II	**Remedy:** to induce a contraction in the supply of credit, and therefore spending, by increasing the interest rate.
III	Announce a lowering of the target cash rate.	III	Announce an increase in the target cash rate.
IV	**Buy government securities and repos in the open market.**	IV	**Sell government securities and repos in the open market.**

13 Our analysis shows that monetary policy operates through a complex cause–effect chain:

(a) The monetary authority alters the target cash rate in line with its view on the inflationary or recessionary pressures in the economy.

(b) Changes in the cash rate increase the opportunity cost of holding money (M_3) and alter the cost of investment funds.

(c) Changes in the interest rate charged on investment funds affect investment.

(d) Changes in the level of planned investment alter the equilibrium GDP and the price level by changing the level of aggregate demand in the economy.

14 There are complications associated with the operation of monetary policy, namely questions of policy effectiveness and feedbacks, and the operation of the net export effect.

15 Policy effectiveness reflects the shapes of the demand-for-money curve and the investment-demand curve. The steeper is the demand-for-money curve, the greater will be the required increase in the cost of investment funds for any given increase in the cash rate; the more elastic the investment-demand curve, the greater the impact of monetary policy on investment and hence equilibrium real GDP. There is a feedback effect from monetary policy to the demand for investment funds through the impact of changes in GDP on company profits and hence their investment plans. Reductions in GDP tend to reduce business profits, causing businesses to revise downwards their planned investment levels. This leads to a fall in the demand for investment funds, which blunts the impact of monetary policy.

16 The net export effect acts to reinforce the domestic impact of monetary policy. It reflects the impact of interest rate changes on the currency's value due to the presence of floating exchange rates. An increase in interest rates leads to exchange rate appreciation. The cost of Australian-produced goods rises overseas, while the cost of foreign goods purchased in Australia tends to fall. A fall in net exports results, reducing aggregate demand. A decrease in interest rates has the opposite effect.

17 Monetary policy has both shortcomings and strengths. The *shortcomings* of monetary policy include:

- cyclical asymmetry, which implies that while a tight money policy will reduce activity, a lack of confidence in the private sector may reduce the effectiveness of easy monetary policy due, for example, to banks' inability or unwillingness to lend
- the potential for conflict with Treasury goals
- its potential ineffectiveness against cost-push inflation due to its focus on aggregate demand
- questions about its actual impact on investment, reflecting the idea that investment expenditures may not be highly interest sensitive.

The *strengths* of monetary policy are:

- the speed and flexibility with which it may be implemented relative to fiscal policy
- its political acceptability due to its broad impact and slight removal in the mind of the public from the government of the day.

18 Figure 12.6 provides a useful summary statement of our description of macroeconomic theory and policy. It merits careful study.

KEY TERMS *and* CONCEPTS *to remember*



easy and tight money policies 393
exchange settlement account (ESA) 395
feedback 407
foreign exchange swap 402
fundamental objective of monetary policy 392
monetary policy 392
net export effect 409
open-market operations (OMOs) 400
payments system 395
repurchase agreement (repo or RP) 396
yield curve 397

QUESTIONS *and* STUDY SUGGESTIONS



Discussion & review

1 What is the basic objective of monetary policy? Does the RBA have a particular target to guide it in its implementation of monetary policy? If so, what is it?

2 Describe the simple cause–effect chain through which monetary policy is made effective.

3 What are the components of the balance sheet of the RBA? Which of these are most important to the conduct of monetary policy?

4 What is the cash rate? What is its role in the setting of monetary policy?

5 What are exchange settlement account (ESA) funds? Are the levels of ESA funds stable or unstable? Why? What role do ESA funds play in the operation of monetary policy?

6 What are open-market operations? How are they conducted? What instruments does the RBA use in conducting these transactions?

7 What are interest-sensitive expenditures? Describe them briefly. Why is their presence important to the operation and effectiveness of monetary policy?

8 How do open-market operations affect investment expenditure? Is the effect direct or indirect? Explain.

9 What is the relationship between monetary policy and the equilibrium levels of real GDP and the price level? Explain the links and the process by which monetary policy may alter these two variables.

10 Which two factors may have a significant influence on the effectiveness of monetary policy? Explain. Are feedback effects important in determining the effectiveness of monetary policy?

11 What is the net export effect? In what way does it differ from the foreign-purchases effect? What is its impact on monetary policy's effectiveness? Explain.

12 What are the strengths of monetary policy? What are its weaknesses?

13 Summarise the theory of employment. Show in detail how monetary and fiscal policies might affect the various components of aggregate expenditures.

14 What does the theory of employment suggest about the relationship between fiscal and monetary policies? Explain.

15 Why is it unrealistic to expect fiscal and monetary policies to result in complete economic stability? What might be done to improve monetary and fiscal policies?



1 Using Figures 12.4 and 12.5 as a point of reference, discuss how both (a) the shapes of the money-demand and investment-demand curves and (b) the position on the aggregate supply curve influence the effectiveness of monetary policy. How do feedback effects influence the effectiveness of monetary policy?

2 Suppose you are recommending monetary policy. The economy is experiencing a sharp and prolonged inflationary trend. What change in open-market operations would you recommend? Explain how the change you advocate would affect the cash rate and the cost and availability of credit, particularly investment funds. Use diagrams to support your discussion.

3 Design an anti-recession stabilisation policy, involving both fiscal and monetary policies, which is consistent with:

(a) a relative decline in the public sector

(b) greater income equality

(c) a high rate of economic growth.

List the important elements and how each would help you to achieve your objectives.

4 Explain: 'Truly effective stabilisation policy presumes the coordination of fiscal and monetary policy.' Show why this must be the case, using diagrams showing the aggregate demand – aggregate supply model and diagrams dealing with monetary policy and its impact.



1 How does the Reserve Bank of Australia (RBA) view the operation of monetary policy? Visit its website at:
http://www.rba.gov.au/

You will find information about this subject in the section 'About the RBA'.

2 What factors does the RBA consider important in its monitoring of the economy? Upon which variables does it focus? Again, you should visit the RBA's website. Look at the list of recent publications. Read the latest *Bulletin,* particularly the section dealing with the economy and financial markets. You may also like to glance at some of the speeches made by the Governor of the RBA and the Assistant Governors.

(a) List the factors and issues that appear to be most important to the RBA in its review of economic activity.

(b) In what way do these factors or issues fit in with your understanding of monetary policy and with employment theory in general?

A LAST WORD BANKS SEEK BUFFER AGAINST NEW CRISES

The Asian crisis highlighted the weakness of the financial sector and the inadequacy of existing regulatory arrangements in many of Asia's economies. Changes adopted as a result of the impact of the crisis are intended to support macroeconomic growth and stability. However, as reported in this article, the degree to which different countries have implemented reforms that will help to achieve these objectives varies widely.

Asian countries have undergone sufficient financial reforms to underpin growth in the new millennium, but more changes are yet to come as governments seek to protect themselves from the huge financial risks of further crises, a new report has found.

'Asia's Financial Markets: Capitalising on Reform', a report by the Department of Foreign Affairs and Trade's East Asia Analytical Unit (EAAU), found that virtually all governments in Asia had undergone significant financial reforms in response to the crisis in 1997. These reforms included dramatic market openings (in South Korea, Indonesia and Thailand), adoption of global regulatory reforms, rapid growth of new financial products, and the implementation of new technologies including Internet banking.

The report predicted more changes such as further market openings, rapid consolidation and more universal banking systems. EAAU executive director Dr Frances Perkins said while change had been rapid in some countries, others would need more time to implement reforms. 'Countries like Indonesia and Thailand are trying to succeed in bringing in new legislation for bankruptcy—these types of changes will take at least a generation to achieve,' she said.

The report found:

- Indonesia has major challenges to address in the accounting sector, corporate governance and government transparency.
- Thailand needs to focus on prudential reforms, with the report warning against vested interests placing pressure on the government to resist change.
- Malaysia has addressed its financial system weakness rapidly and effectively, but it is unlikely to further open its market to international competition.
- The Philippines' uncompetitive banking system needs more consolidation, more competitive pressure and less onerous taxation and reserve requirements.
- Hong Kong lost international competitiveness during the crisis because of its dollar peg.
- Singapore's decision to abolish foreign equity limits and permit financial holding companies should stimulate mergers and alliances.
- Taiwan is still 'overbanked' and more consolidation needs to occur.
- Japan's financial sector has a new preoccupation with profitability.
- China has accorded top priority to financial reform, with the sector's role in the economy set to expand after the country enters the WTO.
- South Korea's reshaped financial industry will have a greater role for foreign investors.

SOURCE: Randolph Ramsay, 'Banks Seek Buffer against New Crises', Business Asia, *11 February 2000.*

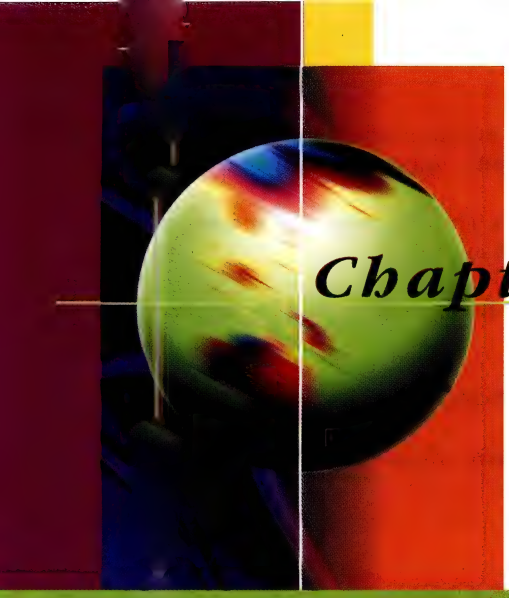
Questions

1 Looking at the list of reforms provided in the article, what 'trends' do you observe in the structure and regulation of the region's financial systems? Outline the likely impact of each of these trends.

2 Which economies or governments stand out as fighting against the general changes to financial market structures and the regulation of financial systems that are emerging in the region? Why might the governments of these countries not wish to follow international trends? Explain. What implications might this have for the stability and operation of their financial systems?

3 What macroeconomic reasons exist for most governments to desire financial system stability? Explain.

4 What are the implications of a rapidly changing financial system for the ability of central banks to conduct monetary policy? Outline some of the difficulties that may emerge in the conduct of monetary policy if the financial system is not relatively stable.



Chapter 13 MACRO-ECONOMIC DEBATES

INTRODUCTION

The conception of employment theory and stabilisation policy summarised in the discussion of Figure 12.6 presents a view of macroeconomics that has dominated the thinking of many economists over the last three decades. In fact, many of the economic policies that Australia has implemented over the last two and a half decades can be readily interpreted in light of our aggregate demand – aggregate supply analysis of Chapters 8 to 12. Thus we can understand the current emphasis on monetary policy as a means to control inflation, and the heavy use of expansionary fiscal policy at times to stimulate a recessionary economy.

It would be incorrect, however, to say that all economists hold a consensus view firstly on the inherent stability of the economy, and secondly on the appropriate policy prescriptions for alleviating society's macroeconomic woes. Indeed, the area of economics denoted by macroeconomics has been and is still the subject of substantial and often vigorous debate. We will divide economists into various 'schools' of thought on the operation of the macroeconomy, and the behaviour of the economic agents that inhabit this theoretical world. This will allow us to analyse key differences in opinion in macroeconomics, although to achieve this we will have to focus on extreme views from within each group. Rare is the actual economist who is not more eclectic than we may suggest in the review of the schools of thought that follows.

Our first point will be to examine the differences between the classical and Keynesian schools. Second we will see how Keynesian thought itself was challenged by an alternative conception of macroeconomics in the form of monetarism, which asserts that the role of money in determining the level of economic activity and the price level is much greater than that suggested by Keynesian theory. Next we will present a third view of macroeconomics, known as rational expectations theory (RET), which asserts that economic agents rationally create expectations of the outcomes of our stabilisation policies and, in doing so, render them largely ineffective. Our survey of this third view will be brief, mainly because it has its roots in classical employment theory, which we have already covered, and because it is related in some areas to monetarism. Following this we will provide a brief review of supply-side economics. Finally we will acknowledge that some of the important insights provided by the alternative schools of thought have been integrated into our mainstream body of macroeconomic theory.

The implications of this will be further explored in Chapter 14.

LEARNING OBJECTIVES

- **Review the classical and Keynesian views of the economy and then present them within a simplified aggregate demand – aggregate supply framework.**
- **Examine the monetarist position, and its emphasis on the money supply through a development of the equation of exchange.**
- **Briefly describe the rational expectations theory (RET), and its implications for policy makers.**
- **Review supply-side economics and its implications.**
- **Discuss the insights that these alternative views have provided on the operation of the macroeconomy.**

CLASSICAL EMPLOYMENT THEORY

Classical theory of employment: the view that underspending in a capitalist economy was highly unlikely, and that where this did happen the price system, through rapid adjustment of all prices (including interest rates and wages) would act to ensure the rapid return to full employment.

Until the Great Depression of the 1930s, many economists—now called **classical economists**—felt that the price system was capable of providing for the full employment of the economy's resources. It was acknowledged that now and then abnormal circumstances would arise in such forms as wars, political upheavals, droughts, speculative crises, gold rushes and so forth, to push the economy from the path of full employment. But it was contended that when these deviations occurred, automatic adjustments within the price system would soon restore the economy to the full-employment level of output.

The **classical theory of employment** was grounded on two basic notions. First, it was argued that underspending—that is, a level of spending insufficient to purchase a full-employment output—was most unlikely to occur. Second, even if a deficiency of total spending were to arise, price–wage adjustments (including to the interest rate) would occur so as to ensure that the decline in total spending would not entail declines in real output, employment and real incomes.

SAY'S LAW

Say's law: that the very act of producing goods generates an amount of income exactly equal to the value of the goods produced. Thus the production of any output automatically provides the incomes required to take that output off the market—supply creates its own demand.

Classical theory's denial of the possibility of underspending was based upon faith in **Say's law**. Say's law is the disarmingly simple notion that the very act of producing goods generates an amount of income exactly equal to the value of the goods produced; that is, the production of any output would automatically provide the means to take that output off the market—supply creates its own demand.

The essence of Say's law can be envisaged most easily in terms of a barter economy. A shoemaker, for example, produces or supplies shoes as a means of buying or demanding the shirts and socks produced by other craftspeople. The shoemaker's supply of shoes is that person's demand for other goods. And so it allegedly is for other producers and the entire economy: demand must be the same as supply. In fact, the circular-flow model of the economy and national income accounting both suggest something of this sort. The income generated from the production of any level of total output would, when spent, be just sufficient to provide a matching total demand. Assuming that the composition of output is in accord with consumer preferences, all markets would be cleared of their output. It would seem that all that business owners need do to sell a full-employment output is to produce that output; Say's law guarantees that there will be sufficient consumption spending for its successful disposal.

SAVING: A COMPLICATING FACTOR

However, there is one obvious omission in this simple application of Say's law. Although it is an accepted truism that output gives rise to an identical amount of money income (see Chapter 4), there is no guarantee that the recipients of this income will spend it all. Some income might be saved (not spent) and therefore not reflected in product demand. Saving would constitute a break, or 'leakage', in the income–expenditure flows and therefore would undermine the effective operation of Say's law. Saving is a withdrawal of funds from the income stream that will cause consumption expenditures to fall short of total output. If households saved a given portion of their incomes, supply would not create its own demand. Saving would cause a deficiency of consumption. The consequences? Unsold goods, cutbacks in production, unemployment and falling incomes.

SAVING, INVESTMENT AND THE INTEREST RATE

The classical economists argued that saving would not really result in a deficiency of total demand, because each and every dollar saved would be invested by businesses. Investment would fill any consumption 'gap' caused by saving, compensating for the deficiency in consumer spending. Business firms do not plan to sell their entire output to consumers; rather, they produce a considerable portion of total output in the form of capital goods for sale to one another. Thus investment spending by businesses provides an addition to the income–expenditure stream that may fill any consumption gap arising from saving. If businesses as a group intend to invest as much as households want to save, Say's law will hold and the levels of domestic output and employment will remain constant. Therefore, whether or not the economy could achieve and sustain a level of spending sufficient to provide a full-employment level of output and income would depend upon whether businesses were willing to invest enough to offset the amount households want to save.

To support their answer to this basic problem, the classical economists argued that capitalism contains a very special market—the money market—that guarantees an equality of saving and investment plans and, therefore, full employment; that is, the money market—and, more specifically, the interest rate (the price paid for the use of money)—ensures that dollars that leak from the income–expenditure stream as saving automatically reappear as dollars spent on investment goods.

The rationale underlying the saving-and-investment equating adjustments of the interest rate was simple and quite plausible. The classical economists contended that, other things being equal, households normally prefer to consume rather than to save. The consumption of goods and services satisfies human wants; idle dollars do not. Hence, it was reasoned that consumers would save only if someone would pay interest as a reward for their thriftiness. The greater the interest rate, the more dollars saved; that is, the saving (supply-of-dollars) curve of households would be up-sloping, as shown by S in Figure 13.1(a). And who would be inclined to pay for the use of saving? None other than investors—business owners who seek (demand) money capital to replace and enlarge their plants and stocks of capital equipment. Because the interest rate is a cost to borrowing businesses, they are more willing to borrow and invest at low than at high interest rates. This means that the investment (demand-for-dollars) curve of businesses is down-sloping, as shown by I in Figure 13.1(a).

Classical economists concluded that the money market would establish an equilibrium price for the use of money—an equilibrium interest rate—at which the quantity of dollars saved (supplied) would equal the number of dollars invested (demanded).

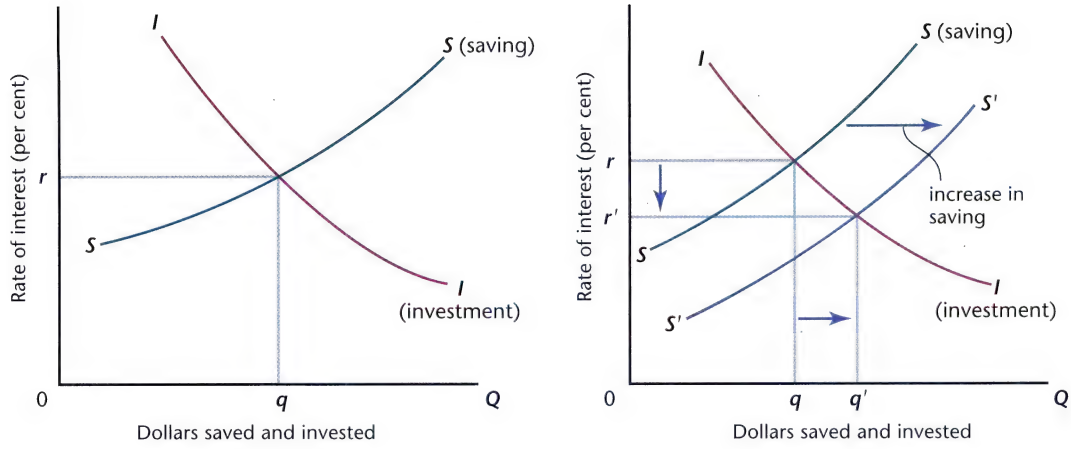


FIGURE 13.1
Classical view of the money market

The classical economists believed that the saving plans of households would be reflected in a supply-of-dollars curve, *SS*, and the investment plans of businesses in a demand-for-dollars curve, *II*, in the money market. In (a) the equilibrium interest rate *r*, the price paid for the use of money, would equate the amounts households and businesses planned to save and invest, thereby guaranteeing a full-employment level of spending. In (b) an increase in desired saving at each interest rate results in a rightward shift of the supply-of-dollars curve to *S'S'*. The equilibrium interest rate therefore falls to *r'* and the new equilibrium amounts of dollars saved and invested increases to *q'*. At *q'* the amounts of saving and investment are again equal and the full-employment level of spending is again assured.

In terms of Figure 13.1(a) the interest rate would be r and the amounts of saving and investment both would be q. Saving, said the classical economists, does not really constitute a break in the income–expenditure stream or a fatal flaw in Say's law because the money market or, more specifically, the interest rate will guarantee that each and every dollar saved will get into the hands of investors and be spent on capital equipment. Therefore, an increase in thriftiness is not a cause for social concern because this simply shifts the supply-of-saving curve to the right, from S to S' in Figure 13.1(b). Although saving will momentarily exceed investment and perhaps cause some temporary unemployment, the surplus of saving will drive the interest rate down to a new and lower equilibrium level, r'. And this lower interest rate will expand the volume of investment spending until it again equals the amount of saving at q', thereby preserving full employment.

In short, changes in the interest rate would guarantee the operation of Say's law even in an economy in which substantial saving occurs. As the classical economists saw it, the economy was analogous to a gigantic bath where the volume of water measured the levels of output and employment. Any leakage down the drain of saving would be returned to the bath through the investment tap. This had to be the case because the interest rate connected the drainpipe and the tap!

PRICE–WAGE FLEXIBILITY

The classical economists bolstered their conclusion that full employment is the norm of capitalism with a second basic argument. They argued that the level of output that business producers can sell depends not only upon the level of total spending but also upon the level of product prices. This meant that even if the

interest rate somehow temporarily fails to equate the amounts households want to save with the investment intentions of businesses, any resulting decline in total spending will be offset by proportionate declines in the price level; that is, $200 will buy four shirts at $50 but $100 will buy the same number of shirts only if their price falls to $25. Hence, if households somehow managed to succeed in saving more than businesses were willing to invest, the resulting decline in total spending would not result in a decline in real output, real income and the level of employment if product prices declined in proportion to the decline in expenditures.

And, according to the classical economists, this is precisely what would happen. Competition among sellers would guarantee it! As declines in product demand became general, competing producers would lower their prices to dispose of accumulating surpluses. In other words, the result of 'excess' saving would be to lower prices; and lower prices, by increasing the value of the dollar, would permit non-savers to obtain more goods and services with their current money incomes. Saving would therefore lower prices, but not output and employment.

'But,' ever-present sceptics have asked, 'doesn't this ignore the resource market? Although businesses can sustain their sales in the face of a declining demand by accepting lower product prices, won't they find it unprofitable to do so? As product prices decline, won't resource prices—particularly wage rates—have to decline significantly to permit businesses to produce profitability at the now lower prices?'

Classical economists replied that wage rates must and would decline. General declines in product demand would be mirrored in declines in the demand for labour and other resources. The immediate result would be a surplus of labour—that is, unemployment—at the wage rate prevailing prior to these declines in the demand for labour. However, though not willing to employ all workers at the original wage rates, producers would find it profitable to employ additional workers at lower wage rates. The demand for labour, in other words, is downsloping; those workers unable to locate employment at the old higher wage rates could find jobs at the new lower wage rates.

Would workers be willing to accept lower wage rates? Competition among unemployed workers, according to the classical economists, would guarantee it. In competing for scarce jobs, idle workers would bid down wage rates until these rates (wage costs to employers) were so low that employers would once again find it profitable to hire all available workers. This would happen at the new lower equilibrium wage rate.

The classical economists therefore concluded that involuntary unemployment was impossible. Anyone who was willing to work at the market-determined wage rate could readily find employment. Competition in the labour market ruled out involuntary idleness.

CLASSICAL THEORY AND LAISSEZ FAIRE

Price–wage flexibility: the assumption that all prices, including wages and interest rates, are flexible and will rapidly adjust to remove disequilibria.

In the classical view these price system adjustments—fluctuations in the interest rate on the one hand, and **price–wage flexibility** on the other—seemed fully capable of maintaining full employment in a capitalistic economy. Working together, the classical economists felt, the two adjustment mechanisms made full employment a foregone conclusion. The classical economists came to embrace capitalism as a self-regulating economy where full employment was regarded as the norm. Capitalism was capable of 'running itself'. Government assistance in the operation of the economy was deemed unnecessary—even harmful. In an economy capable of achieving both full production and full employment, government interference could only be a detriment to its efficient operation. The logic of the classical theory led to the conclusion that a laissez-faire ('leave-to-do') economic policy was desirable.

Concept highlights

- Classical employment theory envisioned laissez-faire capitalism as being capable of providing virtually continuous full employment. This analysis was based on Say's law and the assumption of price–wage flexibility.
- The classical economists argued that because supply creates its own demand, general overproduction was impossible. This conclusion was held to be valid even when saving occurred, because the money market or, more specifically, the interest rate, would automatically synchronise the saving plans of households and the investment plans of businesses.
- Classical employment theory also held that even if temporary declines in total spending were to occur, these declines would be compensated for by downward price–wage adjustments to the end that real output, employment and real income would not decline.

THE GREAT DEPRESSION AND KEYNES'S ECONOMICS

Two major events during the 1930s were associated with the undermining of Say's law and the classical position on employment. These led to the recognition that underspending or overspending are both a theoretical and real possibility.

THE GREAT DEPRESSION

While it is possible to explain minor recessions or depressions in terms of wars and similar external considerations, serious and prolonged downswings, such as the Great Depression of the 1930s, were not so easily rationalised. For Australia, the effects of the Great Depression actually started earlier due to a collapse of trade in the late 1920s. Output for Australia had fallen by around 13 per cent by 1932, while measured unemployment was higher than 19 per cent. The negative effects of the Great Depression lasted for nearly a decade. There is a remarkable inconsistency between a theory that concludes that unemployment is virtually impossible and the actual occurrence of a 10-year siege of very substantial unemployment. And so various economists came to criticise both the rationale and the underlying assumptions of classical employment theory. They tried to find a better, more realistic explanation of those forces that determine the level of employment.

KEYNES AND KEYNESIAN ECONOMICS

In 1936 the English economist John Maynard Keynes gave a new explanation of the cyclical nature of the level of employment in capitalistic economies. In his *General Theory of Employment, Interest, and Money*, Keynes attacked the foundations of classical theory and started a major revolution in economic thinking on macroeconomic questions. In particular, Keynes disputed Say's law, pointing out that in some periods not all income will get spent on the output produced. Widespread underspending is a likely outcome, with the result that excess production may result. A failure to sell all the output expected will see an accumulation of unwanted stores of goods—inventories will increase. Additionally, providers of services will not achieve their target hours of employment and incomes. Producers of goods and services will respond by reducing their desired levels of output, cutting their employment. A recession or depression will result.

Keynesian economics: the body of theory refined and extended from the economics of Keynes. The schools of thought associated with this body of theory view the capitalist economy as inherently unstable and likely to achieve equilibrium with considerable unemployment or severe inflation, rather than a sustainable full-employment level of output.

Keynes initiated modern employment theory, but many others have since refined and extended his work. The modern aggregate expenditures model reflects **Keynesian economics**, as it stands today, not just the economics of Keynes. When viewed from within the aggregate expenditures framework, the capitalist economy simply does not contain any mechanisms capable of guaranteeing full employment. The economy is inherently unstable, and might come to rest—that is, reach an aggregate output equilibrium—with either considerable unemployment or severe inflation. Full employment is more of an accident than a norm. Capitalism is not a self-regulating system capable of perpetual prosperity; capitalism cannot be depended upon to 'run itself'.

Furthermore, economic fluctuations should not be associated exclusively with external forces such as wars, droughts and similar abnormalities. Rather, the Keynesian view sees that the causes of unemployment and inflation lie to a very considerable degree in the failure of certain fundamental economic decisions—in particular, saving and investment decisions—to be completely synchronised in a capitalistic system. Also, product prices and wages are downwardly inflexible, meaning that extended and socially costly periods of recession or depression must occur before wages and prices will significantly decline. Internal, in addition to external, forces contribute to economic instability.

THE UNLINKING OF SAVING AND INVESTMENT PLANS

Keynes rejected Say's law by seriously questioning the ability of the interest rate to synchronise the saving and investment plans of households and businesses. The fact that modern capitalism is amply endowed with an elaborate money market and a wide variety of financial institutions has not diminished this scepticism about the interest rate as a mechanism capable of connecting the saving drain and the investment tap. The classical contention that business firms would invest more when households increased their rates of saving is untenable. After all, does not more saving mean less consumption? Will business planners expand their capital facilities as the markets for their products shrink? More generally, savers and investors are essentially distinct groups that formulate their saving and investment plans for different reasons that, in each instance, are largely unrelated to the rate of interest.

SAVERS AND INVESTORS ARE DIFFERENT GROUPS

Who decides the amounts to be saved and invested in a capitalistic economy? Business organisations of all kinds and, in particular, companies make the vast majority of investment decisions. And who makes the saving decisions? Here the picture is more complex. In a wealthy economy such as that of Australian capitalism, households save substantial amounts—at least when prosperity prevails. It is also true, of course, that business companies do a considerable amount of saving in the form of undistributed company profits. The important point is that to a significant degree saving and investment decisions are made by different groups of individuals.

SAVERS AND INVESTORS ARE DIFFERENTLY MOTIVATED

The non-identity of savers and investors would not necessarily be fatal to the classical theory if their decisions were motivated and synchronised by some common factor such as the interest rate. But this is not the case. Saving decisions are motivated by diverse considerations. Some save to make large purchases that exceed any single pay cheque; for example, households save to make down

payments on houses and to buy cars or colour television sets. Some saving is solely for the convenience of having a pool of liquid funds readily available to take advantage of any extraordinarily good buys we may chance on. Saving may occur to provide for the future needs of an individual's family; for example, households save to provide for the future retirement of the family breadwinner(s). Saving may be a precautionary, rainy-day measure—a means of protecting ourselves against such unpredictable events as prolonged illness and unemployment. Saving may be merely a deeply ingrained habit that is practised on an almost automatic basis with no specific purposes in mind. Much saving is highly institutionalised or contractual, for example payments for life insurance, superannuation and annuities. This was, in fact, one of our arguments in constructing the aggregate expenditures model in Chapter 6.

The basic point is that none of these diverse motives for saving is particularly sensitive to the interest rate. In fact, we can easily pose a situation where, contrary to the classical conception shown in Figure 13.1(a), saving is inversely rated to the interest rate. To illustrate—if a family requires an annual retirement income of $6000 from saving, it will need to save $100 000 if the interest rate is 6 per cent, but only $50 000 if the interest rate is 12 per cent!

What does determine the level of saving? From Chapter 6, it may be argued reasonably that the primary determinant of both saving and consumption is the level of GDP—that is, incomes.

Why do businesses purchase capital goods? The motivation for investment spending is complex. The interest rate—the cost of obtaining financial capital with which to invest—undoubtedly is a consideration in formulating investment plans. But the interest rate is not the only important factor. The rate of profit that business firms expect to realise on the investment is the really crucial determinant of the amounts they desire to invest. Further, during the downswing of the business cycle, profit expectations will be so bleak that the level of investment will be low and possibly declining despite substantial reductions in the interest rate. Interest rate reductions may not stimulate investment spending when it is most sorely needed.

MONEY BALANCES AND BANKS

Modern economic theory sees the classical conception of the money market as the market for investable funds, as in Figure 13.1(a), as being oversimplified and therefore incorrect in another sense. Specifically, the classical money market assumes that current saving is the only source of funds for the financing of investment. However, there are two other sources of funds that can be made available in the money market:

1. the accumulated money balances held by households
2. banks and their ability to generate deposits against loans due to the presence of excess reserves.

As we saw in Chapter 10, the public holds money balances not merely to negotiate day-to-day transactions, but also as a form of accumulated wealth. Now the important point for present purposes is that, by drawing down or decumulating a portion of these money balances and offering these dollars to investors, a supply of funds in excess of current saving can be made available for investment. Similarly, as we found in Chapter 11, when banks make loans, they add to the money supply and to the amount of investment funds available. Bank lending, therefore, is also a means of augmenting current saving as a source of funds for investment. The consequence is that a *reduction in the money balances*

held by households and *bank lending* can lead to an amount of investment that is in excess of current saving. This implies that Say's law is invalid and that output, employment and the price level can fluctuate.

More specifically, we shall soon discover that an excess of planned investment over saving results in an increase in total spending that has an expansionary effect on the economy. If the economy is initially in a recession, output and employment will increase; if the economy is already at full employment, the added demand will cause demand-pull inflation.

Conversely, classical theory is incorrect in assuming that all current saving will appear in the money market. If:

1 households add some of their current saving to their money balances rather than channel it into the investment markets, or

2 some current saving is used to retire outstanding bank loans,

then the amount of funds made available in the investment markets will be less than that shown by the classical saving curve in Figure 13.1(a).

This suggests that the amount of current saving will exceed the amount invested. Again, Say's law does not hold and macroeconomic instability will result. In this case the excess of saving over investment will mean a decline in total expenditures that is contractionary—output and employment will tend to fall.

To summarise—saving and investment plans can be at odds and so result in fluctuations in total output, income, employment and the price level.

THE DISCREDITING OF PRICE–WAGE FLEXIBILITY

But what of the classical contention that downward price–wage adjustments will eliminate the unemployment effects of a decline in total spending?

EXISTENCE OF PRICE–WAGE FLEXIBILITY

Keynesian economics recognised that some prices and wages are flexible downwards. In fact in Australia during the early 1990s, some prices fell, and large numbers of workers were forced to accept wage freezes and reduced fringe benefits. Some salaries were reduced. The causal factor behind this was the worst recession and the highest unemployment rates since the 1930s. But, Keynesian economics argues, price–wage flexibility simply does not exist to the degree necessary for ensuring the restoration of full employment in the face of a decline in aggregate demand. The price system of modern capitalism is not perfectly competitive; rather, it is riddled by market imperfections and circumscribed by practical and political obstacles that work against downward price–wage flexibility. Monopolistic producers, dominating many important product markets, have both the ability and the desire to resist falling product prices as demand declines. And in the resource markets, strong labour unions are equally persistent in holding the line against wage cuts. In this endeavour they are ably assisted by minimum-wage legislation, public opinion about what are reasonable and 'customary' wage rates, and practical-minded politicians who are well aware of the power of labour at the polls.

Furthermore, some employers are wary of the idea of cutting wages, recognising the adverse effects that this could have on worker morale and productivity. In short, as a practical matter, downward price–wage flexibility cannot be expected to offset the unemployment effects of a decline in aggregate demand.

USEFULNESS

If price–wage declines are accompanied by a contraction of total expenditures, it is doubtful that these declines would help reduce unemployment. The reason? The volume of total money demand cannot remain constant as prices and wages decline; that is, lower prices and wages necessarily mean lower money incomes, and lower money incomes in turn entail further reductions in total spending. The net result is likely to be little or no change in the depressed levels of output and employment.

Keynesian economics points out that the classical economists were tripped up in their reasoning by the fallacy of composition. Because any particular group of workers typically buys only a small amount of what they produce, the product and therefore labour demand curves of a single firm can be regarded as independent of any wage (income) changes accorded to its own workers. In other words, it is correct to reason that a decline in its wage rate will move a single firm down its stable labour demand curve and result in more workers hired—that is, more employment. But the same reasoning, argue Keynesians, is not applicable to the economy as a whole, or to general wage cuts. Why? Because wages are the major source of income in the economy.

Widespread wage declines result in declines in incomes and in the demand for both products and the labour used in producing them. The result is that employers hire little or no additional labour after the general wage cuts. What holds true for a single firm—a wage cut for its employees will not adversely affect labour demand—is not true for the economy as a whole; general wage cuts will lower money incomes and cause the demand for products and labour to decline generally.

A recapitulation: Keynesian economics argues, in the first place, that prices and wages are in fact not particularly flexible downwards and, second, that even if they were, it is doubtful that price–wage declines would alleviate widespread unemployment.

Concept highlights

- Keynesian economic theory rejected the notion that the interest rate would equate saving and investment, by pointing out that savers and investors are substantially different groups who make their saving and investment decisions for different reasons—reasons largely unrelated to the interest rate. Further, because of (a) changes in the public's holdings of money balances and (b) bank loans, the supply of investment funds may exceed or fall short of current saving to the end that saving and investment will not be equal.
- Keynesian economics discredits price–wage flexibility on both practical and theoretical grounds. Keynesians argue that union and business monopolies, minimum-wage legislation and related factors have virtually eliminated the possibility of substantial price–wage reductions, and that price–wage cuts will lower total income and therefore the demand for labour.

CLASSICS AND KEYNES: RESTATEMENT OF AGGREGATE DEMAND AND AGGREGATE SUPPLY

The classical and Keynesian views of the macroeconomic world can be meaningfully restated and compared in their crude or extreme forms in terms of a simplified presentation of Chapter 8's aggregate demand and aggregate supply

curves. Note that in each case the aggregate supply curve is a combination of both the short-run aggregate supply curve and the long-run aggregate supply curve of Chapter 8. Thus each shares elements in common with the simplified presentation of aggregate supply in Chapter 5.

CLASSICAL VIEW

The classical view is that the aggregate supply curve is vertical and therefore exclusively determines the level of real domestic output. On the other hand, the down-sloping aggregate demand curve is stable and it alone establishes the price level.

VERTICAL AGGREGATE SUPPLY CURVE

The classical position sees the aggregate supply curve as a vertical line, as shown in Figure 13.2(a). Thus the classical view is consistent with a long-term analysis of the level of economic activity, focusing as it does on the importance of the supply side of the economy. We have purposely located this line at the economy's full-employment or potential output, Q_f. This, remember, is where the 'natural' rate of unemployment is being realised. According to the classical economists, the economy will operate at this full-employment level of output for the reasons previously discussed: Say's law, flexible interest rates, and responsive prices and wages.

We stress that the classical economists believed that Q_f does not change in response to changes in the price level. Observe, for example, that as the price level falls in Figure 13.2(a) from P_1 to P_2, real domestic output remains firmly anchored at Q_f.

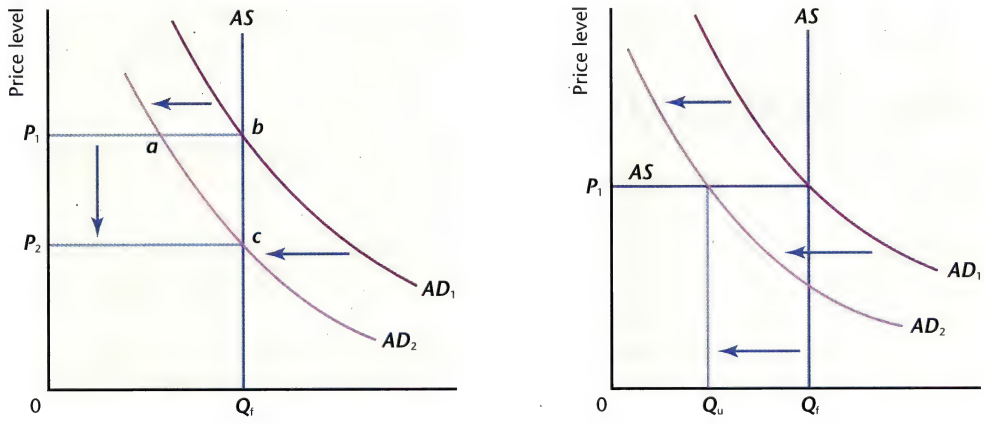


FIGURE 13.2
Classical and Keynesian views of the macroeconomy: (a) classical theory and (b) Keynesian theory

According to classical theory as shown in (a), aggregate supply will determine the full-employment level of real domestic output while aggregate demand will establish the price level. Aggregate demand is normally stable, but if it should decline, say, as shown from AD_1 to AD_2, the price level will quickly fall from P_1 to P_2 to eliminate the temporary excess supply of ab and to restore full employment at c. The Keynesian view in (b) is that aggregate demand is unstable and that price and wages are downwardly inflexible. A decline from AD_1 to AD_2 in aggregate demand has no effect on the price level. Rather, real output falls from Q_f to Q_u and can remain at this equilibrium indefinitely.

But, you might argue, this stability of output seems at odds with Chapter 3's up-sloping supply curves for individual products. There we found that lower prices would make production less profitable and cause producers to offer less output and presumably employ fewer workers. The classical response to your argument is that input costs would fall along with product prices to leave real profits unchanged and therefore output unchanged.

Consider a simplified example. Assume we have a one-firm economy in which the firm's owner must receive a real profit of $20 to be induced to produce the full-employment output of 100 units. You will recall from Chapter 5 that the real income that we receive is important, not the level of prices. Assume further that the only input (besides personal entrepreneurial talent) is 10 units of labour hired at $8 per worker for a total wage cost of $80 (= 10 × $8). Also assume that the 100 units of output sell for $1 per unit so that total revenue is $100 (= 100 × $1). This firm's nominal profit is $20 (= $100 − $80) and, using the $1 price to calculate the base price index of 100, its real profit is also $20 (= $20 ÷ 1.00). Thus full employment is achieved. But suppose the price level declines by one-half. Would our producer still realise the $20 of real profits needed to induce the production of a 100-unit full-employment output?

The classical answer is 'yes'. Now that the product price is only $0.50, total revenue will only be $50 (= 100 × $0.50). However, the cost of 10 units of labour will be reduced to $40 (= 10 × $4) because the wage rate will be halved. Although nominal profits fall to $10 (= 50 − $40), real profits remain at $20. In other words, by dividing money profits of $10 by the new level of the price index (expressed as a decimal) we obtain real profits of $20 (= $10 ÷ 0.50).

A generalisation: with perfectly flexible wages there would be no change in the real rewards and therefore the production or output behaviour of businesses. Under conditions of perfect wage flexibility, a change in the price level would not cause the economy to stray from its full-employment position.

STABLE AGGREGATE DEMAND

The classical economists theorised that money underlies aggregate demand. Specifically, the amount of real domestic output that can be purchased depends upon:

1. the quantity of money that households and businesses possess
2. the purchasing power or real value of that money as determined by the price level.

Recall that the purchasing power of the dollar simply refers to the real quantity of goods and services that a dollar will buy. Thus as we move down the vertical axis of Figure 13.2(a) the price level is falling. This means that the purchasing power of each dollar increases and therefore the given quantity of money will be capable of purchasing a larger quantity of real output. If the price level were to decline by one-half, a given quantity of money would now purchase a real domestic output that is twice as large. Given a fixed money supply, the price level and real domestic output are inversely related.

And what of the location of the aggregate demand curve? According to the classical economists, aggregate demand will be reasonably stable if the nation's monetary authorities maintain a constant supply of money. Given aggregate supply, increases in the supply of money will shift the aggregate demand curve rightwards and spark demand-pull inflation; reductions in the supply of money will shift the curve leftwards and trigger deflation. The key to price level stability then, according to the classical economists, is to control the nation's money supply to prevent unwarranted shifts in aggregate demand.

A final observation: even if there are declines in the money supply and therefore in aggregate demand, the economy depicted in Figure 13.2(a) will not experience unemployment. Admittedly, the immediate effect of a decline in aggregate demand from AD_1 to AD_2 is an excess supply of output, in that aggregate output of goods and services exceeds aggregate spending by the amount *ab*. But, given the presumed downward flexibility of product and resource prices, this excess supply will reduce product prices along with the workers' wages and the prices of other inputs. As a result, the price level will quickly decline from P_1 to P_2 until the amounts of output demanded and supplied are brought once again into equilibrium, this time at *c*. While the price level has fallen from P_1 to P_2, the level of real domestic output remains at the full-employment level.

KEYNESIAN VIEW

As noted earlier, the core of Keynesian theory is that, at least in the short run, product prices and wages are downwardly inflexible, resulting in what is graphically represented as a horizontal aggregate supply curve. Additionally, aggregate demand is subject to periodic changes caused by changes in one or more of the determinants of aggregate demand (Table 8.1). Let's explore these two points in terms of Figure 13.2(b).

HORIZONTAL AGGREGATE SUPPLY CURVE (TO FULL-EMPLOYMENT OUTPUT)

Downward inflexibility of prices and wages translates to a horizontal aggregate supply curve, as shown in Figure 13.2(b). Here, a decline in aggregate demand from, say, AD_1 to AD_2 has an impact solely upon output and employment. Real domestic output falls from Q_f to Q_u while the price level remains constant at P_1. A 'Keynesian range' of the aggregate supply curve therefore extends from zero real domestic output rightwards to the full-employment or potential output level, Q_f. Once full employment is reached, the aggregate supply curve becomes vertical. This view is shown by the vertical line extending upwards from the horizontal aggregate supply curve at Q_f.

UNSTABLE AGGREGATE DEMAND

Keynesian economists view aggregate demand as being unstable from one period to the next, even if there are no changes in the supply of money. In particular, the investment component of aggregate demand fluctuates, thereby altering the position of the aggregate demand curve. Suppose, for example, that aggregate demand in Figure 13.2(b) falls from AD_1 to AD_2. The sole impact of this change in aggregate demand will be on output and employment, in that real domestic output falls from Q_f to Q_u while the price level remains constant at P_1. Further, Keynesians believe that unless there is a fortuitous offsetting increase in aggregate demand, real domestic output will remain in recession at Q_u, which is below the full-employment level Q_f.

Active macroeconomic policies of aggregate demand management by government are essential, then, if the gigantic wastes of recession and depression are to be avoided.

KEYNESIANS AND MONETARISTS

The monetarist view—which has strong roots in classical theory—is that markets are competitive and that the competitive market system provides the economy

with a high degree of macroeconomic stability. **Monetarism** also argues that the price and wage flexibility that competitive markets provide would cause fluctuations in aggregate expenditures to alter product and resource prices rather than output and employment. Thus the market system would provide substantial macroeconomic stability, were it not for ill-advised government interference with the functioning of the economy.

The problem, as the monetarists see it, is that western governments have fostered and promoted downward price–wage inflexibility through minimum wages, pro-union legislation, farm price supports, pro-business monopoly legislation, and so on. The free-market system could provide substantial macroeconomic stability, but, despite good intentions, government interference has undermined this capability. Further, as we shall detail shortly, the monetarists argue that government has contributed to the instability of the system—to the business cycle—through its clumsy and mistaken attempts to achieve greater stability through discretionary fiscal and monetary policies.

Given the above comments, it is no surprise that monetarists have a strong laissez-faire or free-market orientation. Governmental decision-making is thought to be bureaucratic, inefficient, harmful to individual incentives, and frequently characterised by policy mistakes that destabilise the economy. Further, centralised decision-making by government inevitably erodes individual freedoms. The public sector should be kept to the smallest possible size.

Note that Keynesians and monetarists are almost diametrically opposed in their conceptions of the private and public sectors. To the Keynesians, the instability of private investment causes the economy to be unstable. Government plays a positive role by applying appropriate stabilisation medicine. To the monetarists, government creates rigidities that weaken the capacity of the market system to provide substantial stability, and it embarks upon monetary and fiscal measures that, although well intentioned, aggravate the very instability they are designed to cure.

THE BASIC EQUATIONS

Keynesian and monetarist economy theories both build their analyses on specific equations.

Aggregate expenditures equation

The Keynesian equation: the basic formulation of the aggregate expenditures basis for GDP: $C + I + G + NX = \text{GDP}$, showing that, in equilibrium, aggregate GDP expenditures equal GDP.

Keynesian economics focuses on aggregate spending and its components. Our basic equation of the Keynesian model—the **Keynesian equation**—is:

$$C + I + G + NX = \text{GDP} \quad (1)$$

This theory says in essence that the aggregate amount spent by buyers is equal to the total value of the goods and services sold. In equilibrium, $C + I + G + NX$ (aggregate expenditures) is equal to GDP (real output).

Equation of exchange

Monetarism, as the label suggests, focuses on money. The basic equation of monetarism is the **equation of exchange**:

$$MV = PQ \quad (2)$$

where M is the supply of money; V is the **velocity of money** (that is, the number of times per year the average dollar is spent on final goods and services); P is the price level or, more specifically, the average price at which each unit of physical output is sold; and Q is the physical volume of goods and services produced. The label 'equation of exchange' is easily understood. The left

Equation of exchange: the basic equation of the monetarist school, given as:

$MV = PQ$

where M is the supply of money; V is the velocity of money (that is, the number of times per year the average dollar is spent on final goods and services); P is the price level; and Q is the level of real domestic output.

side, MV, represents the total amount spent by the purchasers of output, while the right side, PQ, represents the total amount received by the sellers of that output.

It should be emphasised at the outset that both approaches are useful and important for the understanding of macroeconomics. In fact, the Keynesian equation can be quite readily 'translated' into monetarist terms. According to the monetarist approach, total spending is simply the supply of money multiplied by its velocity. In short, MV is the monetarist counterpart of $C + I + G + NX$. Because MV is the total amount spent on final goods in one year, it is obviously equal to GDP. Further, we know from Chapter 4 that GDP is the sum of the physical outputs of various goods and services (Q) multiplied by their respective prices (P); that is, GDP = PQ. Thus, we can restate the Keynesian $C + I + G + NX$ = GDP equation as the monetarist equation of exchange, $MV = PQ$. In a very real sense, the two approaches are two ways of looking at the same thing.

It should be noted that there is an important conceptual difference in the sense that the Keynesian $C + I + G + NX$ represents planned expenditures and MV refers to actual spending. But the critical question remains: which is the more accurate portrayal of macroeconomics and therefore the better basis for economic policy?

SPOTLIGHT ON MONEY

The Keynesian equation clearly puts money in a secondary role. Indeed, the Keynesian conception of monetary policy entails a rather lengthy transmission mechanism:

change in monetary policy → change in the interest rate → change in investment → change in nominal GDP

The change in investment affects output and employment through the multiplier.

Keynesians contend there are many loose links in this cause–effect chain, with the result that monetary policy is an uncertain, unreliable and weak stabilisation tool when compared with fiscal policy. Remember some of the weaknesses of monetary policy cited in the previous chapter. For example, you will recall from Figures 12.4 and 12.5 that monetary policy may be relatively ineffective if the money-demand curve is relatively flat and the investment-demand curve is relatively steep at the current interest rate. Further, the investment-demand curve may shift adversely so that the impact of a change in the interest rate on investment spending is dampened or offset. Nor will an easy money policy be very effective if banks are not anxious to lend or the public eager to borrow.

To the monetarists, money and monetary policy are much more important in determining the level of economic activity than they are to the Keynesians. In fact, the monetarists hold that changes in the money supply are the single most important factor in determining the levels of output, employment and prices. They believe that the cause–effect chain between the supply of money and the level of economic activity is short, direct and tight. Specifically, if V, the velocity of money, is stable or growing at a steady and known rate, the equation of exchange suggests that changes in the money supply will have a predictable effect upon the level of GDP (= PQ); that is, if V velocity is stable *or* growing at 2 per cent, a 4 per cent growth in the money supply M will mean a predictable 4 *or* 6 (= 4 + 2) per cent growth in GDP. Although the growth in GDP may be predictable, the precise effects on the latter's components, P and Q, are not. For example, if V is constant, an increase in M will increase P or Q or both P and Q.

Most monetarists believe that although a change in M may cause short-run changes in real output and employment as market adjustments occur, the long-

run impact of a change in M will be upon the price level. You will recall that monetarists believe the private economy is inherently stable and tends to operate at the full-employment level of output. The exact level of that full-employment output depends upon such 'real' factors as the quantity and quality of labour, capital and land, and technology.

For present purposes, the point to be made is that if Q is constant at the economy's capacity output, then changes in M will give rise to changes in P.

Monetarism implies a simpler and much more direct transmission mechanism than does the Keynesian model. In the monetarist view:

change in money supply → change in GDP

THE BEHAVIOUR OF VELOCITY

A critical theoretical issue involved in the debate between Keynesians and monetarists centres on the behaviour of the velocity of money, V. The equation of exchange tells us that if the monetarists are correct and V is stable or growing on a steady long-term trend, then there is clearly a direct and dependable relationship between the money supply and the money GDP ($= PQ$). For example, let's say that V grows at 5 per cent each year. A constant money supply will still mean a 5 per cent growth in GDP since V is growing. However, a 3 per cent growth in M will mean an overall 8 ($= 3 + 5$) growth in GDP; a 5 per cent money growth will mean a 10 per cent growth in GDP, and so on. If, however, the behaviour of V is much more erratic or unpredictable over time, then the closeness of the relationship between GDP and M will be lessened.

Monetarists: V is stable or on a steady long-term trend

Let us start with the early monetarist view that V is stable. What rationale do monetarists offer for this contention? Basically, they argue that money is primarily a medium of exchange; the store-of-value function of money is inconsequential.

In other words, there is a transactions demand for money, but not an asset demand. Further, the amount of money the public will want to hold will depend upon the volume of transactions—that is, upon the level of GDP. Consider a simple example. Suppose that, when the level of nominal GDP is $400 billion, the amount of money that the public wants or desires to hold to negotiate the purchase of this output is $100 billion. (This implies that V is 4.) If we further assume that the actual supply of money is $100 billion, we can say that the economy is in equilibrium with respect to money; that is, the actual amount of money supplied is equal to the amount the public desires to hold.

In the monetarist view, an increase in the money supply of, say, $10 billion will upset this equilibrium, in that the public will now be holding more money or liquidity than it wants to hold; the actual amount of money being held exceeds the desired amount. What happens? According to the monetarists, the excess money balances will be spent on real assets—that is, on consumer and investment goods. This clearly means that nominal GDP will rise. By how much? Since velocity is 4—that is, the typical dollar is spent four times per year—GDP must rise by $40 billion. The rationale is that when nominal GDP reaches $440 billion, the actual money supply will again be the amount that the public desires to hold and, by definition, equilibrium will be re-established. The basic point is that spending on goods and services will increase until nominal GDP has increased to the extent that the original equilibrium relationship between nominal GDP and the money supply is the same as it was prior to the increase in the money supply. In fact that relationship, GDP ÷ M, defines V! A stable relationship between GDP and M means a stable V. More recently some

monetarists have argued that velocity is on a steady long-term trend. Why? The reasoning is that over time the methods by which transactions are made may change, and do so gradually. Institutional factors such as the length of pay periods, the availability of credit cards and other forms of credit have grown slowly, so that V has increased gradually over an extended period of time.

Keynesians: V is unstable

In the Keynesian view, the velocity of money is tied to the demand for money. Money is demanded not only to use in negotiating transactions, but also to hold as an asset. Money demanded for transactions purposes will be 'active' money—that is, money that is changing hands and circulating through the income–expenditure stream. In other words, transactions dollars have some positive velocity; for example, the average transactions dollar may be spent, say, six times per year and thereby negotiate $6 worth of transactions. In this case V is 6 for each transactions dollar. But money demanded and held as an *asset* is 'idle' money; these dollars do *not* flow through the income–expenditure stream and therefore their velocity is zero. It follows that the overall velocity of the entire money supply will depend on how it is divided between transactions and asset balances. Obviously, the greater the relative importance of 'active' transactions balances, the larger will be V. Conversely, the greater the relative significance of 'idle' asset balances, the smaller will be V.

Given this framework, Keynesians discredit the monetarist transmission mechanism—the allegedly dependable relationship between changes in M and changes in GDP—by arguing that a substantial portion of any increase in the money supply may go into asset balances, causing V to fall. In the very extreme case, assume *all* the increase in the money supply is held by the public as additional asset balances; that is, the public simply hoards the additional money and uses none of it for transactions. The money supply will have increased, but velocity will decline by an offsetting amount so that there will be no effect whatsoever of an increased money supply upon the size of GDP!

We can consider the Keynesian position at a slightly more sophisticated level. We note that the relative importance of the asset demand for money varies inversely with the rate of interest. Thus an easing of monetary policy lowers the interest rate. Because it is now less expensive to hold money as an asset, the public holds larger zero-velocity asset balances. Therefore, the overall velocity of the money supply falls. Conversely, a tightening of monetary policy raises the interest rate, making it more costly to hold money as an asset. The resulting decline in asset balances increases the overall velocity of money. In the Keynesian view, velocity varies directly with the rate of interest.

If this analysis is correct, the relationship between M and GDP embodied in the monetarist's transmission mechanism does not exist, because V will vary whenever M changes. V will not be stable or even on a steady long-term trend.

Empirical evidence

The behaviour of V is obviously an empirical question, and an appeal to 'the facts' would seem sufficient to settle the issue. But, unfortunately, the facts are not easy either to discern or to interpret. For example, monetarists point to data such as those shown in Figure 13.3 in support of their contention that there is a close correlation between M and GDP.

However, when we calculate and plot V = GDP ÷ M as in Figure 13.4, we find that velocity is not on a reliable trend. Rather, as Figure 13.4 shows, velocity and the interest rate have at times tended to move together, although following

the deregulation of the Australian financial sector, this relationship has become less precise. Velocity, in the Keynesian view, is variable both cyclically and secularly, and these variations seriously downgrade the role of money as a determinant of output, employment and the price level.

Keynesians add this reminder: given the large size of the money supply, a small variation in velocity can have a very substantial impact on GDP. For example, assume M is \$100 billion and V is 4. A modest 10 per cent increase in V will cause a \$40 billion increase in money GDP; that is, MV—and therefore PQ—is initially \$400 billion (= \$100 × 4). Now, if V increases by 10 per cent to 4.4, PQ will be \$440 billion (= MV = 100 × 4.4). Stated in terms of the issue at hand, a very small variation in V can offset a large change in M.

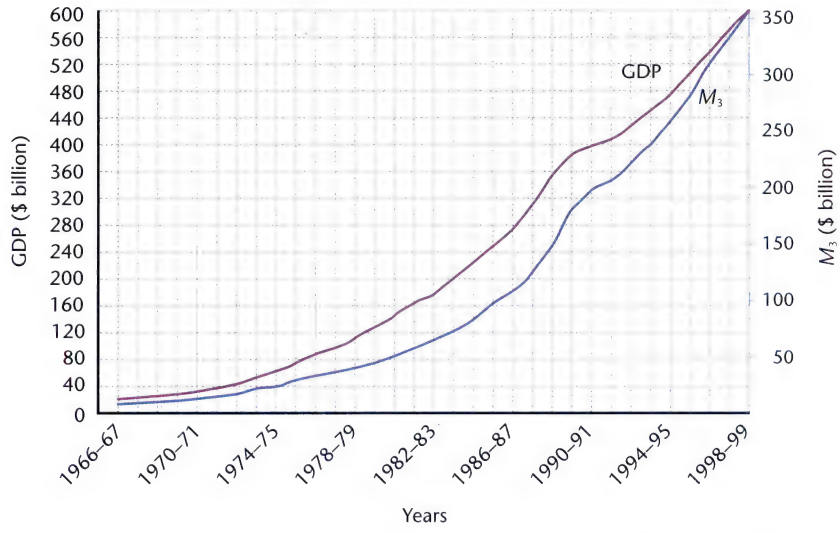


FIGURE 13.3
The money supply and the level of GDP, 1966–67 to 1998–99

Monetarists cite the close positive correlation between the money supply and money GDP as evidence in support of their position that money is the critical determinant of economic activity and the price level. They assume that the money supply is the 'cause' and the GDP is the 'effect', an assumption that Keynesians question.

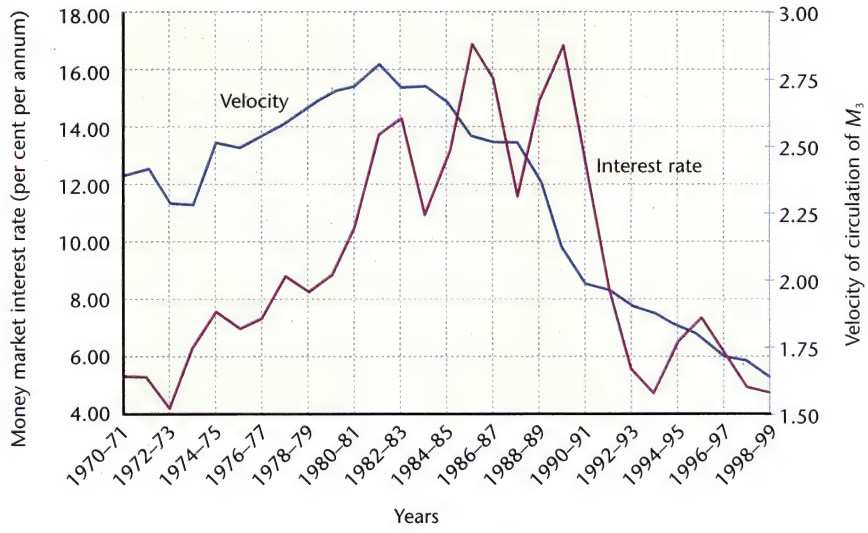
SOURCE: Reserve Bank of Australia, Australian Economic Statistics 1949–50 to 1994–95, *and Reserve Bank of Australia,* Bulletin, *various issues.*

Further, Keynesians hold that correlation and causation are quite different things. Is it not possible that the changes in money GDP portrayed in Figure 13.3 were in fact caused by changes in aggregate spending, as suggested by the Keynesian model? And is it not also possible that the indicated growth in domestic output prompted—indeed required—businesses and consumers to borrow more money over time from banks to finance this rising volume of economic activity?

In other words, Keynesians claim that causation may in fact run from aggregate spending *to* domestic output *to* the money supply, with the money supply being determined endogenously, rather than from the money supply *to* domestic output, as the monetarists contend. The important point, the Keynesians argue, is that the data of Figures 13.3 and 13.4 are as consistent with the Keynesian view as they are with the monetarists' position.

FIGURE 13.4
The velocity of money and the interest rate, 1970–71 to 1998–99

Keynesians argue that the velocity of money varies both cyclically and secularly. Hence, they conclude that any link between a change in the money supply and the subsequent change in nominal GDP is tenuous and uncertain. Post-Keynesians, many of whom believe that the money supply is endogenously determined with the interest rate being determined by the monetary authority, would see no relevance in these figures. Other Keynesians contend that velocity varies directly with the rate of interest because a lower interest rate will increase the size of the zero-velocity asset balances and therefore lower the overall velocity of money.



SOURCE: Reserve Bank of Australia, Australian Economic Statistics 1949–50 to 1994–95, *and Reserve Bank of Australia,* Bulletin, *various issues.*

POLICY DEBATES

The differences in the Keynesian and monetarist theories spill over into the area of stabilisation policy.

THE FISCAL POLICY DEBATE

Keynesians tend to favour fiscal measures as the cornerstone of stabilisation policy. They contend that fiscal policy is a much more powerful stabilisation device than is monetary policy. This is implied by the basic equation of Keynesianism. Government spending, after all, is a direct component of aggregate spending. And taxes are only one short step removed, in that tax changes allegedly affect consumption and investment in dependable and predictable ways.

Monetarists seriously downgrade or, in the extreme, reject fiscal policy as both a reallocative and a stabilisation device. They believe that fiscal policy is weak and ineffectual because of the crowding-out effect (see Chapter 9). Monetarists' reasoning goes like this: suppose government runs a budgetary deficit by selling securities—that is, by borrowing from the public. By borrowing, they argue, government is obviously competing with private businesses for funds; that is, government borrowing increases the demand for money, raises the interest rate, and thereby crowds out a substantial amount of private investment that otherwise would have been profitable. Hence, the net effect of a budget deficit upon aggregate expenditures is unpredictable and, at best, modest.

Further, monetarists believe that the investment-demand curve is relatively elastic; that is, investment spending is very sensitive to changes in the interest rate. In short, the initial increase in the demand for money causes a relatively large rise in the interest rate which, projected off an interest-sensitive investment-demand curve, causes a large decline in the investment component of aggregate expenditures. The resulting large contractionary effect offsets the expansionary impact of the fiscal deficit and, on balance, the equilibrium GDP is unaffected.

So sayeth Friedman: ' ... in my opinion, the state of the budget by itself has no significant effect on the course of nominal [money] income, on inflation, or deflation, or on cyclical fluctuations.'[1] Admittedly, if a deficit was financed by the issuing of new money, the crowding-out effect could be avoided and the deficit would be followed by economic expansion. But, the monetarists point out, the expansion would be due, not to the fiscal deficit per se, but rather to the creation of additional money!

Keynesians, for the most part, do not deny that some investment may be crowded out. But they perceive the amount as being small and, hence, they conclude that the net impact of an expansionary fiscal policy on equilibrium GDP will be substantial. The Keynesian view is that the demand-for-money curve is relatively elastic and the investment-demand curve is inelastic. This combination tends to make monetary policy relatively weak and ineffective. Hence, any increase in money interest rates will cause a very modest increase in the interest rate on investment funds which, when bounced off an inelastic investment-demand curve, will result in a very small decrease in the investment component of aggregate expenditures. In other words, little investment will be crowded out. Keynesians acknowledge that a deficit financed by creating new money will have a greater stimulus than one financed by borrowing, due to its reduced impact on the interest rates charged on investment funds.

MONETARY POLICY: DISCRETION VERSUS RULES

The Keynesian conception of monetary policy is, of course, that portrayed in Figures 12.4 and 12.5. In fact, the presentation of Figures 12.4 and 12.5 is often associated with the post-Keynesian body of Keynesian thought. As just noted, Keynesians believe that the money-demand curve is relatively elastic and the investment-demand curve relatively inelastic, causing monetary policy to be a comparatively weak stabilisation tool. We have also seen that, in contrast, monetarists contend that the money-demand curve is very inelastic and the investment-demand curve quite elastic, a combination that means that a change in the money supply has a powerful effect upon equilibrium GDP. This is obviously in keeping with monetarism's fundamental contention that the money supply is the critical determinant of the level of economic activity and the price level.

However, most monetarists do not advise the use of easy and tight money policies to modify the 'downs' and 'ups' of the business cycle. Professor Friedman contends that, historically, the discretionary changes in the money supply made by the monetary authorities have in fact been a destabilising influence in the economy. Examining the monetary history of the United States from the Civil War up to the establishment of the Federal Reserve System in 1913 and comparing this with the post-1913 record, Friedman concludes that, even if World War II and the immediate post-war period are ignored, the latter (post-1913) period was clearly more unstable. Most of this decline in economic stability after the Federal Reserve System became effective is attributed to faulty decisions on the part of the monetary authorities. In the monetarist view, economic instability is more a product of monetary mismanagement than it is of any inherent destabilisers in the economy.

Irregular time lags

According to the monetarists, there are two important sources of monetary mismanagement. First, there is the matter of time lags. Although the monetary transmission mechanism is direct and straightforward, changes in the money supply have their impact upon GDP only after a rather long and variable time

period. Friedman's empirical work suggests that a change in the money supply may significantly change GDP in as short a period as six to eight months or in as long a period as two years! Because it is virtually impossible to predict the time lag involved in a given policy action, there is little chance of determining accurately when specific policies should be invoked or, in fact, which policy measure—easy or tight money—is appropriate. Indeed, given the uncertain duration of this time lag, the use of discretionary monetary policy to 'fine-tune' the economy for cyclical 'ups' and 'downs' may backfire and intensify these cyclical changes. For example, suppose an easy money policy is invoked because the various economic indicators suggest a mild recession. But assume now that within the ensuing six months the economy, for reasons quite unrelated to public policy actions, reverses itself and moves into the prosperity-inflationary phase of the cycle. At this point in time the easy money policy becomes effective and reinforces the inflation.

Interest rate: wrong target

Second, monetarists argue that the monetary authorities have typically attempted to control interest rates for the purpose of stabilising investment and, therefore, the economy. If we recall the discussion in Chapter 12 on monetary policy, we see a problem. The Reserve Bank cannot simultaneously control both the money supply and interest rates. Therefore, in trying to stabilise interest rates, the Reserve Bank might destabilise the economy by allowing the money supply to be, in the main, determined endogenously.

Consider an example. Suppose the economy is coming out of a recession and is currently approaching full employment with aggregate spending, output, employment and the price level all increasing. This expanding volume of economic activity will cause the demand for money to increase, and therefore cause interest rates on investment funds to rise. Now, if the monetary authorities reason that their task is to stabilise interest rates, they will embark on an easy money policy. But this expansionary monetary policy will add to aggregate expenditures at a time when the economy is already on the verge of an inflationary boom; that is, the attempt to stabilise interest rates in the investment markets will fan existing inflationary fires and tend to make the economy less stable. A similar scenario is applicable to an economy moving into a recession.

The monetary rule

Monetarist moral: the monetary authorities should stabilise, not the interest rate, but the rate of growth of the money supply. Specifically, Friedman advocates legislating the **monetary rule** that the money supply be expanded each year at the same rate as GDP; that is, the supply of money should be increased steadily at, say, 3 per cent per year.

Monetary rule: the money supply should be expanded each year at the same rate as GDP.

> *Such a rule ... would eliminate ... the major cause of instability in the economy—the capricious and unpredictable impact of counter-cyclical monetary policy. As long as the money supply grows at a constant rate each year, be it 3, 4 or 5 per cent, any decline into recession will only be temporary. The liquidity provided by a constantly growing money supply will cause aggregate demand to expand. Similarly, if the supply of money does not rise at a more than average rate, any inflationary increase in spending will burn itself out for lack of fuel.*[2]

The Keynesian response is that, despite a somewhat spotty record, it would be foolish to replace discretionary monetary policy with a monetary rule. Arguing that V is variable both cyclically and secularly, Keynesians contend that a

constant annual rate of increase in the money supply could contribute to substantial fluctuations in aggregate spending and promote economic instability due to the variability in the interest rate that this would imply. As one Keynesian quipped, the trouble with the monetary rule is that it tells the policy maker, 'Don't do something, just stand there.'

Business IMPLICATION

THE RAPID AND FREE ADJUSTMENT OF MARKETS



The classical and new classical schools of thought hold that markets tend to rapidly resort to equilibrium if left unfettered by government controls. Thus they advocate limited intervention in order to promote economic efficiency. Other schools of thought such as the post-Keynesians and new Keynesians dispute that markets will display this form of behaviour, due to either long lags in adjustment or the presence of market imperfections. Can both sets of ideas be right, or is there a middle ground? What does this debate imply for the practising economist? It implies a need to analyse each macroeconomic market type according to its own characteristics. Thus the idea of free adjustment to equilibrium may rarely be applicable to labour markets—contracts take time both to run their agreed period and to renegotiate, suggesting significant adjustment lags. Financial markets, on the other hand, frequently display rapid adjustment towards a new equilibrium in the face of new information or changes in underlying conditions. The implication is that we need to take all schools of thought seriously and to recognise that being widely educated in the ideas and application of each may make us better practical economists.

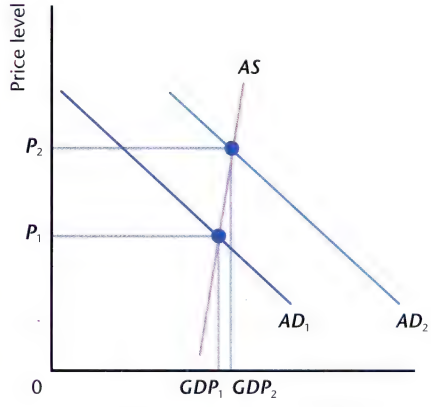
AGGREGATE DEMAND – AGGREGATE SUPPLY ANALYSIS

It is a helpful exercise at this point to contrast monetarist and Keynesian views in terms of our earlier aggregate demand – aggregate supply model. Figure 13.5(a) illustrates the monetarist perspective within the aggregate demand – aggregate supply framework, while Figure 13.5(b) illustrates that of the Keynesians. By bringing aggregate supply into the picture we can see more clearly the implications of each model for real output and the price level. We can also further our understanding of policy differences.

We begin on the demand side. The key difference here, as we already know, concerns the kinds of factors that will cause a shift in aggregate demand.

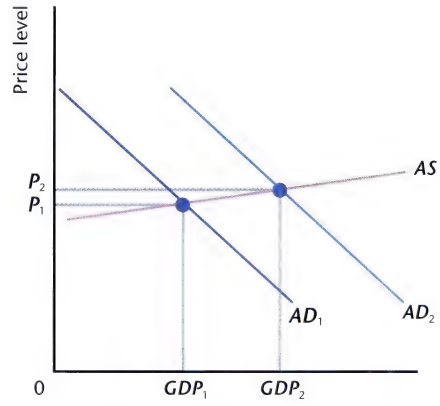
FIGURE 13.5
Monetarism, Keynesianism and the aggregate demand – aggregate supply model

Monetarists assert that the aggregate supply curve is relatively steep as in (a). The implication of this view is that any change to aggregate demand through monetary policy will have little impact on equilibrium real domestic output, but will result in large increases in the price level. Keynesians view the aggregate supply curve as being relatively flat as in (b). Thus changes to aggregate demand through fiscal or monetary policy will have a large impact on the level of real domestic output, but only a small impact on the price level.



Real gross domestic product

a. Monetarist *AD–AS* perspective



Real gross domestic product

b. Keynesian *AD–AS* perspective

Monetarists assert that aggregate demand shifts rightwards or leftwards primarily as the result of an increase or decrease, respectively, in the money supply. Keynesians are more eclectic, recognising that in addition to changes in private spending both fiscal and monetary policy can shift the aggregate demand curve.

On the supply side we find that the monetarists view the aggregate curve as nearly vertical, as in Figure 13.5(a), or in the extreme, vertical. In contrast, Keynesians conceive of it as being quite flat, as in Figure 13.5(b), or in the extreme case, horizontal. This is nothing new to us, as a glance back at Figure 13.2 will confirm. The aggregate supply curve presented there has a horizontal or near-horizontal 'Keynesian' range and a vertical or near-vertical 'classical' range. The flat Keynesian range reflects the belief that the economy often operates short of the full-employment or capacity level, while a near-vertical range mirrors the classical heritage of monetarism and the belief that flexible prices and wages continuously move the economy towards full employment.

IMPLICATIONS FOR POLICY

Differences in conception of the aggregate supply curve held by monetarists and Keynesians are extremely important to stabilisation policy. First, in the monetarist view a change in aggregate demand affects the price level primarily, and has little impact upon real GDP. If policy makers attempt to use stabilisation policy to increase real output and employment, their efforts will be largely in vain. As aggregate demand shifts from AD_1 to AD_2 in Figure 13.5(a), we obtain a very modest increase in real output (GDP_1 to GDP_2) but a large increase in the price level (P_1 to P_2). The economy will pay a high 'price' in terms of inflation to realise very modest increases in output and employment.

In comparison, the Keynesian conception indicates that an expansionary policy will have large effects on production and employment and little impact on the price level. Thus in Figure 13.5(b) we find that the increase in aggregate demand from AD_1 to AD_2 will entail a large increase in real output (GDP_1 to GDP_2) while eliciting only a small price level increase (P_1 to P_2). To Keynesians, when the economy operates at less than its potential output level, large gains in real output and employment can be obtained at only a small inflationary cost.

This leads to a second and closely related point. In the monetarist view, stabilisation policy is more effective in curing inflation than it is in curing recession. The Keynesian position is just the opposite. From the monetarist perspective we find that, while an increase in aggregate demand yields a great deal of inflation for a small increase in real output, the restriction of aggregate demand (by, say, stopping unwarranted increases in the money supply) yields a large decline in the price level accompanied by only a small decline in real output.

Now let us turn to the Keynesian view. Invoking a contractionary stabilisation policy to control inflation results in a fall in aggregate demand, which leads to a small price level reduction accompanied by a large decline in real output. It is in part for this reason that some Keynesians are attracted to some form of wage–price or incomes policy (see Chapter 15) to deal with inflation. To recapitulate—if the monetarists are correct in their contention that the aggregate supply curve is nearly vertical, then stabilisation policy will have a larger pay-off in controlling inflation than in overcoming recession. But if the Keynesians are right in arguing that the aggregate supply curve is almost horizontal, then stabilisation policy will be much more effective in curing recession than in fighting inflation. Our discussion also helps explain why monetarists are preoccupied with inflation while Keynesians tend to focus upon unemployment.

Concept highlights

- The Keynesian view is that the price system is largely non-competitive and is therefore permissive of macroeconomic instability. This contrasts with the classical and monetarist view that markets are highly competitive and conducive to macroeconomic stability. These contrasting views are reflected in different conceptions of the nature of the aggregate supply curve. The monetarists view the aggregate supply curve as being vertical at the full-employment level of output. The Keynesian view is that the aggregate supply curve is essentially horizontal up to the point of full employment, due to the presence of price–wage inflexibility.
- To Keynesians, the basic determinant of real output, employment and the price level is the level of aggregate expenditures, hence their basic equation: $C + I + G + NX$ = GDP. The components of aggregate expenditures are determined by a wide variety of factors which, for the most part, are unrelated to the supply of money. The basic equation of monetarism is the equation of exchange: $MV = PQ$. Because velocity V is viewed as being basically stable by the monetarists, or on a stable long-term trend, the critical determinant of real output and employment (Q) and the price level (P) is the supply of money (M).
- The Keynesian position is that fiscal policy is a powerful stabilisation tool because G is a component of aggregate spending and tax changes have direct, dependable effects upon C and I. Monetarists argue that fiscal policy is weak and uncertain in its effects and, unless financed by an increase in the money supply, will raise the interest rate and crowd out private investment spending.
- Keynesians argue that monetary policy entails a lengthy transmission mechanism, involving monetary policy decisions, the interest rate, investment and finally the nominal GDP. Uncertainties at each step in the mechanism limit the effectiveness and dependability of monetary policy. Monetary policy is not as powerful a stabilisation device as is fiscal policy, due to the combination of a relatively elastic demand-for-money curve and a relatively inelastic investment-demand curve.
- Monetarists believe in a dependable link between the money supply and money GDP. However, monetarists think that because of variable time lags in becoming effective and the incorrect use of the interest rate as the policy target, the application of discretionary monetary policy to 'fine-tune' the economy is likely to fail and destabilise the economy. Monetarists therefore recommend the monetary rule that the money supply be increased in accordance with the long-term growth of real GDP.

Business IMPLICATION — WHAT VALUE MONETARIST THOUGHT?

It is often easy to dismiss new, old or different ideas in economics as having little practical relevance when they don't match your particular world view—the school of thought to which you tie yourself. However, practising economists or business and policy analysts often need to take a more eclectic approach to their choice of analytical framework. Although monetarist principles are often considered outdated by many economists, their conclusions and insights are still useful in a number of important areas. Firstly, we can observe that an overly rapid expansion of the money supply—associated with the printing of money by the government—will usually be associated with a rapid rise in the inflation rate. Secondly, this same overly rapid increase in the money supply will usually be associated with a depreciation of the currency's exchange rate. The implication? The monetarists are right in asserting that too rapid an expansion of the money supply will debase the currency, and needs to be watched for when the economic conditions of a country are being examined.

RATIONAL EXPECTATIONS THEORY

Keynesian economics and monetarism do not stand alone in the battle for the minds of economists, policy makers and students. Developed largely from the mid-1970s period, **rational expectations theory (RET)**, alternatively known as the **new classical economics**, has taken shape. Our goal is to relate RET to the debate over whether stabilisation policy should be discretionary, as Keynesians argue, or based on rules, as the monetarists contend. But let us first present some relevant background on RET.

BASIC CONCEPTS

Rational expectations theory (RET): businesses, consumers and workers understand the workings of the economy and use this knowledge to assess the anticipated effects of current economic policies upon the future of the economy and to make decisions that best further their own self-interests.

New classical economics: the school of thought most closely associated with the use of the RET position, which shares the classical school's belief in the highly competitive markets underlying the economy's operation.

RET is based upon the long-recognised point that any theory's predicted outcome depends upon what it assumes about expectations. Consider, for example, a simple supply and demand model. Suppose an unusually large crop causes the supply of sugar to increase. What will be the predicted impact on price?

If consumers expect the increase in supply to be recurring and permanent, the demand for sugar will be unchanged and the price of sugar will fall. But if consumers anticipate that the increase in supply is temporary, they may decide to 'stock up' on sugar. The resulting increase in demand may offset the increase in supply, leaving the price of sugar more or less unchanged. The important point is that different expectations trigger different kinds of economic decisions and, therefore, different outcomes.

RET's proponents go beyond this to argue that businesses, consumers and workers understand the workings of the economy and are able to use available information to make decisions that best further their own self-interests. People do not merely project past developments into the future; they also assess the anticipated effects of current economic policies upon the future of the economy. In short, a 'rational' individual uses all the relevant information available, including information about how the economy functions and how the government conducts economic policy.

This allows the individual to anticipate the consequences of economic changes—whether they are policy generated or otherwise—and accordingly make decisions that will maximise his or her own wellbeing. This is the essence of rational expectations.

RET contains a second basic element that accounts for it being dubbed the 'new classical economics'. Like classical economics, RET assumes that all markets, both product and resources, are purely competitive. Indeed, it goes further by assuming that new information is quickly (almost instantaneously) taken into account in the demand and supply curves of such markets so that equilibrium prices and quantities quickly adjust to new events (for example, technological change), market shocks (such as a drought or a collapse of the OPEC cartel), or changes in public policies (for example, a shift from tight to easy money). Both product and resource prices are highly flexible and change almost instantaneously as consumers, businesses and resource suppliers change their economic behaviour in response to new information.

POLICY FRUSTRATION

Now let us examine the RET contention that the aggregated responses of the public to its expectations will tend to make discretionary stabilisation policies ineffective. Consider monetary policy. Suppose the economy is sluggish and the monetary authorities make pronouncements to the effect that an easy money policy is to be set in place, its purpose to increase real output and employment. But, based upon past experience, the public anticipates that this expansionary policy will be accompanied by inflation. As a result, the public takes self-protective action. Workers press for higher money wages. Businesses increase the prices of their products. Lenders raise their interest rates.

All these responses are designed to prevent inflation from having anticipated adverse effects on the real incomes of workers, businesses and lenders. But collectively this behaviour raises wage and price levels. Hence, the increase in aggregate expenditure brought about by the easy money policy is dissipated in higher prices and wages; therefore, real output and employment do not expand. In Keynesian terms, the higher wage costs (which shift the investment-demand curve to the left) and higher interest rates (which move investors up the investment-demand curve) choke off the increase in investment that the easy money policy was designed to generate. In terms of the monetarists' equation of exchange, the easy money policy increases M and therefore increases aggregate expenditure, MV. But the public's expectation of inflation elicits an increase in P of such an amount that, despite the increased MV, real output, Q, and employment are substantially unchanged.

Note carefully what has occurred here. The decision to increase M was made for the purpose of increasing output and employment. But the public, acting on the expected effects of easy money, has taken actions that have frustrated or nullified the policy's goal. Easy money has been translated into inflation, rather than into desired increases in real output and employment.

We can plausibly argue that the economy would have been better off if it had followed a steady money growth policy, as suggested by the monetary rule. It was, after all, the government's discretionary easy money policy that prompted unions, businesses and lenders to raise wages, prices and interest rates. Why blame these groups for inflation, when the blame should be placed on government?

AGGREGATE DEMAND – AGGREGATE SUPPLY INTERPRETATION

We can deepen our understanding of the RET contention of policy ineffectiveness by examining Figure 13.6. This diagram merely restates the classical model from Figure 13.2(a). Here we go beyond the almost vertical aggregate supply curve of the monetarists and portray the curve as being vertical.

Now, once again assume that an expansionary monetary or fiscal policy shifts the aggregate demand curve rightwards from AD_1 to AD_2. Why doesn't this increase in aggregate demand increase real output significantly (as in the Keynesian model) or at least slightly (as in the monetarist model)? According to RET, the answer is that consumers, businesses and workers understand that an expansionary policy means rising prices, and will have built the expected effects into their market decisions concerning product prices, nominal wage rates, nominal interest rates, and so on. Markets will instantaneously adjust, thereby bringing the price level upwards from P_1 to P_2. In effect, the economy does not move beyond output Q_f because the price level rises by precisely the amount

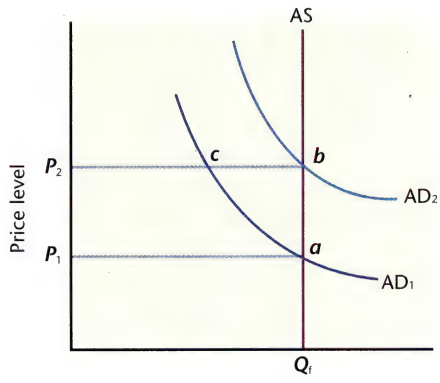


FIGURE 13.6
Rational expectations and the aggregate demand – aggregate supply model

Rational expectations theory implies that the aggregate supply curve is vertical. Strictly interpreted, the theory suggests that an increase in aggregate demand from, say, AD_1 to AD_2 will immediately result in an offsetting increase in the price level (P_1 to P_2) so that real domestic output will remain unchanged at Q_1. Conversely, a decline in aggregate demand from AD_2 to AD_1 will instantaneously reduce the price level from P_2 to P_1, leaving real domestic output and employment unchanged.

required to cancel any impact the expansionary policy might have had upon real output and employment.

It is the combination of rational expectations and instantaneous market adjustments—in this case upward wage, price, and interest rate flexibility—that dooms the policy change to ineffectiveness. As aggregate demand expands from AD_1 to AD_2, the economy moves upwards along the vertical aggregate supply curve directly from point *a* to point *b*. The only result is a higher price level; the real incomes of workers, businesses, lenders, and others are all unchanged because they have rationally anticipated the effects of public policy and have incorporated their expectations into market decisions to cause the resulting upshift of nominal wages, nominal profits and nominal interest rates. Presumably, a decline in aggregate demand from AD_2 to AD_1 would have precisely the opposite effects. Instead of unemployment occurring, the economy would move directly along the aggregate supply curve from *b* to *a*.

In the 'old' classical theory there would be a period in which a decline in aggregate demand would cause a temporary 'lapse' from full employment until market adjustments were completed; that is, the economy would first move from *b* to *c* in Figure 13.6, but then, in time, falling prices and wages would move the economy down AD_1 to full employment at point *a*. But in a strict version of the 'new' classical economics, prices would adjust instantaneously so that real output and employment would not deviate from Q_f. In other words, in the 'old' classical economics, changes in aggregate demand could cause short-run changes in output and employment. But the decision-making process and instantaneous market adjustments of the 'new' classical economics preclude this.

PRO-CYCLICAL POLICY

Rational expectations theorists claim that discretionary policy may reinforce economic instability. Consider the following scenario. Suppose once again that the economy is sliding into a recession. Government's policy response is to cut taxes by enacting, say, an investment tax credit that allows businesses to subtract 10 per cent of their investment expenditures from their taxable incomes. This unexpected windfall boosts anticipated profits on investment projects and so stimulates investment spending. In short, fiscal policy works effectively in the fashion described in Chapter 9.

But if this scenario occurs on several occasions, businesses come to expect that, whenever the economy falls into a recession, policy makers will respond with an investment tax credit or some other form of tax relief. Hence, when recession occurs, businesses postpone investment in anticipation of a forthcoming tax cut that will increase the profitability of that investment. But the decision to defer investment intensifies the cyclical downswing. When the tax cut is actually put into effect, an unusually large spurt of investment occurs. Government tax policy has exaggerated the variability of investment and has intensified both the recession and recovery phases of the cycle. Conclusion—discretionary policy tends to be pro-cyclical rather than counter-cyclical. A much

better alternative, according to the rational expectations theorists, would be to abandon discretionary policy in favour of rules.

A postscript—while RET supports monetarism in arguing for policy rules, it should be stressed that the rationales are quite different. According to RET, policy is ineffective not because of policy errors or the inability to time decisions properly, but because of the reaction of the public to the expected effects of these policies. The monetarists are saying, in effect, that discretionary policy does not work because the monetary authorities do not have enough information about time lags and so on. RET supporters claim that discretionary policy is ineffective because the public has all the relevant knowledge concerning policy decisions and their impacts. The monetarists base their arguments on 'ignorance'; RET bases its conclusion on 'knowledge'.

EVALUATION

There is no question but that RET has caused a substantial stir in economics over the past two and a half decades. Anyone exposed to RET thinking tends to look at the macroeconomy from a somewhat different perspective. Indeed, many of the concepts have been integrated into many of the alternative schools of thought and influence decisions of many policy advisers and makers. The appeal of RET stems from at least two considerations. First, as is the case with monetarism, RET is an option that can help to fill the void left by the alleged inability of traditional Keynesian economics to explain, and to correct by policy, the stagflation of the 1970s and early 1980s. Second, RET is strongly rooted in the theory of markets or, in other words, in microeconomics. Hence, RET may provide the suitable linkages between macroeconomics and microeconomics that economists have long sought.

But the criticisms of RET are many and significantly persuasive, so that it is fair to say that at this point the vast majority of economists do not subscribe to the new classical economics. Let us briefly mention three basic criticisms.

BEHAVIOUR

Many economists question the idea that people by and large are, or can be, as well informed as RET assumes. Can we really expect households, businesses and workers to understand how the economy works and what the impact is of, say, the government's decision to change tax rates? Does everyone earn an 'A' in Economics 1? After all, those economists who specialise in forecasting, after years of education and training, frequently wrongly predict the direction of changes in output, employment and prices, and do not correctly indicate the amounts by which such variables will change! RET proponents respond that key decision-making institutions—the giant companies, the large financial institutions and the powerful unions—do respond as RET suggests and that this is what is critical. But the issue of whether people can and do behave as RET suggests is highly controversial, to say the least.

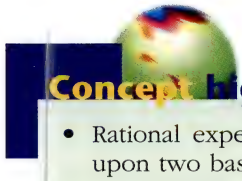
STICKY PRICES

A second main criticism levelled at RET is that, in reality, markets—at least many markets—are not purely competitive and therefore do not adjust instantaneously (or even rapidly) to changing market conditions. While the stock market and certain commodity markets experience day-to-day or minute-to-minute price changes, many sellers can control within limits the prices they charge. When demand falls, for example, these sellers resist price cuts so that the impact is upon output and employment. This is particularly true of labour markets, where

wages may be unresponsive to changing market conditions for extended periods. Critics ask: if markets adjust quickly and completely as RET suggests, how do we explain the decade of severe unemployment of the 1930s or the high unemployment experienced in recent times?

POLICY AND STABILITY

A final criticism is that there is substantial evidence to indicate that, contrary to RET predictions, economic policy does affect real GDP and employment. Thus, in the period since World War II, in which government has more actively invoked stabilisation policies, fluctuations in real output have been less than in earlier periods (see Fig. 5.1). Monetary and fiscal policies do alter the levels of production and employment and are not merely dissipated in price level changes as RET suggests.



Concept highlights

- Rational expectations theory (RET), also often known as the new classical economics, is based upon two basic assumptions:
  - Consumers, businesses and workers understand how the economy works, are able to assess the future effects of policy and other changes, and adjust their decisions to further their own self-interests.
  - Markets are highly competitive and adjust quickly to changes in demand and supply.
- RET holds that, when the public reacts to the expected effects of stabilisation policy, the effectiveness of such policy is negated. This theory therefore supports policy rules as opposed to discretionary policy so as to promote certainty in the economy.
- The criticisms of RET include the inability of people to access the information required to make decisions under RET; the presence of sticky prices over substantial periods; and the apparent success of interventionist economic policy in stabilising the economy in the post-World War II years.

SUPPLY-SIDE ECONOMICS

During the 1970s and 1980s, a number of economists—many of them with conservative leanings and with intellectual roots in classical economics—called attention to a variety of more subtle and fundamental changes in the structure of our economy that allegedly have contributed to stagflation.

Supply-side economists asserted that Keynesian economics could not come to grips with stagflation because its focal point is on aggregate expenditures. Writing in the 1930s against the background of the Great Depression, Keynes focused upon the problems of unemployment and excess productive capacity. As you are aware, his basic conclusion was that depressions are the result of a deficiency of aggregate expenditures, and therefore the expansion of demand through appropriate fiscal and monetary policies would restore full employment. Production costs and aggregate supply play an essentially passive role in the Keynesian model. Given the availability of idle resources, aggregate supply simply responds to an increase in aggregate expenditures. It is the contention of supply-side economists that changes in aggregate supply must be recognised as an 'active' force in determining the levels of both inflation *and* unemployment.

Economic disturbances can be generated on the supply side, as well as on the demand side. Most importantly for present purposes, by emphasising the demand side, Keynesians have neglected certain supply-side policies that might alleviate stagflation.

THE TAX 'WEDGE'

Supply-side economists begin by noting that the historical growth of the public sector has increased the nation's tax bill both absolutely and as a percentage of the national income. Because higher taxes represent a withdrawal of purchasing power from the economy (see Chapter 7), they therefore have a contractionary or anti-inflationary effect. Supply-siders, however, argue to the contrary. They contend that sooner or later most taxes are incorporated into business costs and shifted forwards to consumers in the form of higher prices. Taxes, in short, entail a cost-push effect. Supply-side economists point out that in the 1970s and early 1980s governments at all levels gradually increased taxes such as sales, excise and payroll taxes and property rates. These are precisely the kinds of taxes that are incorporated in business costs and reflected in higher prices. The point is that most taxes constitute a 'wedge' between the costs of resources and the price of a product. As government has grown, this **tax wedge** has increased, tending to shift the aggregate supply curve leftwards.

TAX-TRANSFER DISINCENTIVES

But supply-side economists contend that taxes have even more important adverse effects. The spectacular growth of our tax-transfer system in the past two decades has had highly negative effects on incentives to work, invest, innovate, and assume entrepreneurial risks. In short, the tax-transfer system has eroded the productivity of our economy, and the decline in efficiency has meant higher production costs and stagflation. The argument is, essentially, that higher taxes obviously reduce the after-tax rewards of workers and producers, so making work, innovation, investing and risk bearing less financially attractive. Supply-side economists emphasise the importance of marginal tax rates because they are most relevant to the decisions to undertake additional work and additional saving and investing.

INCENTIVES TO WORK

Supply-siders argue that how long and how hard individuals work depends upon how much additional after-tax earnings will be derived from this extra work. To induce more work—to increase aggregate inputs of labour—marginal tax rates on earned incomes should be reduced. Stated differently, lower marginal tax rates increase the attractiveness of work and simultaneously increase the opportunity cost of leisure. Hence, individuals will choose to substitute work for leisure. This increase in productive effort can occur in many ways—by increasing the number of hours worked per day or per week; by encouraging workers to postpone retirement; by inducing more people to enter the labour force; by making people willing to work harder; by discouraging long periods of unemployment, and so on. There may also be a beneficial long-run effect associated with lower marginal tax rates on earnings. High marginal tax rates reduce the incentives of workers to obtain additional skills and education that increase their productivity. For example, the economic pay-off of a tertiary education is reduced to the extent that government takes a larger share of the extra earnings attributable to that education.

Asian FOCUS

GOVERNMENT CONSUMPTION SPENDING AND THE GENERAL LEVEL OF PRICES

Rational expectations theory (RET) would suggest that government policy intervention will have little impact on the level of economic activity due to the adjustments that this will imply in the spending patterns of both business and consumers. Additionally, given the view that the economy will tend to operate at a full-employment level of output, we would expect that government spending, particularly growth in government spending, would be inflationary.

Country	Average annual rate of growth, 1990–97 (%)	
	General government consumption	Consumer price index
Australia	2.4	2.3
China, mainland	9.9	12.6
India	3.5	9.6
Indonesia	2.3	8.6
Japan	2.3	1.0
Malaysia	7.2	4.0
New Zealand	0.8	2.0
Singapore	8.3	2.3
Thailand	6.1	4.9
Vietnam[a]	13.1	19.7

a GDP deflator substituted for CPI.

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. Does there appear to be a relationship between the rate of growth in government consumption spending and the rate of increase in the CPI? Graph the tabulated data, and examine the graph for evidence of a relationship.
2. Need the presence of an apparent relationship between government spending and inflation imply that the rational expectations approach is valid? Explain.
3. What other factors might help to explain the presence of any correlation between the rate of growth in government spending and the rate of inflation? List and discuss some possible alternatives.

TRANSFER DISINCENTIVES

Supply-side economists also contend that the existence of a wide variety of public transfer programs has eroded incentives to work. For example, the existence of unemployment compensation and welfare programs has made the loss of a job less of an economic crisis than formerly. The fear of being unemployed and, therefore, the need to be a disciplined, productive worker is simply less acute than it was previously. Indeed, most transfer programs are designed to discourage work. For example, our social security transfers are reduced sharply if recipients earn income. These programs simply encourage recipients not to be productive. Why? Because they impose a 'tax', in the form of a loss of transfer benefits, on those who work.

INCENTIVES TO SAVE AND INVEST

The rewards for saving and investing have also been reduced by high marginal tax rates. Assume you save $1000 at 10 per cent, so that you earn $100 interest per year. If your marginal tax rate is, say, 40 per cent, your after-tax interest earnings fall to $60 and the after-tax interest rate is only 6 per cent. While you might be willing to save (forgo current consumption) for a 10 per cent return on your saving, you might prefer to consume when the return is only 6 per cent. Saving, remember, is the prerequisite of investment.

Thus supply-side economists recommend lower marginal tax rates on saving. They also call for lower taxes on investment income to ensure there are ready investment outlets for the economy's enhanced pool of saving. You will recall from Chapter 6 that the primary determinant of investment spending is the after-tax net profitability of that spending. In short, lower marginal tax rates encourage saving and investing, to the end that workers find themselves equipped with more and technologically superior machinery and equipment. Therefore, labour productivity rises and—as the equation used to discuss the productivity decline reminds us—this holds down increases in unit labour costs and the price level.

RESOURCE MISALLOCATION

It can be argued that our tax system is riddled with a variety of tax loopholes. Supply-side economists argue that high marginal tax rates enhance the relative attractiveness of these loopholes, to the end that allocative efficiency is diminished. One of the basic arguments for a flat-rate income tax is that it would release the efforts of large numbers of lawyers and accountants from the task of discovering ways to avoid taxes so they might undertake more productive endeavours!

OVERREGULATION

Supply-siders also claim that government involvement in the economy in the form of regulation has also had adverse effects on productivity and costs. Several points should be noted with regard to this issue. It is often held that 'industrial' regulation—government regulation of specific industries—may have undesirable effects. Government regulation frequently has the effect of providing firms in the regulated industry with a kind of legal monopoly, or cartel; that is, government regulation in effect protects such firms from the rigours of competition, with the result that these firms tend to be less efficient and incur higher costs of production than they would otherwise do.

An alternative view to this is that government regulation may restrict the operation of the industry, making it less competitive. An example of this was the regulation of the banking industries in Australia and the United States, which led to the decline in the banks' shares of financial assets during the 1970s and 1980s.

Additionally, there has occurred a substantial increase in the 'social' regulation of industry in the past two decades. An array of government regulations has been imposed upon industry in response to the problems of pollution, product safety, worker health and safety, and equal access to job opportunities. Supply-side economists point out that social regulation has significantly increased the costs of doing business. The overall impact of both varieties of regulation is that costs and prices are higher, and there is a tendency towards stagflation.

Concept highlights

- Supply-side economists trace the stagflation of the 1970s and 1980s to the growth of the public sector, specifically the growing tax 'wedge' between production costs and product prices.
- Supply-side economists also focus on the adverse incentive effects of the tax-transfer system, and overregulation of businesses, each of which tends to reduce aggregate supply and equilibrium real and potential output.

Global SNAPSHOT — GROWTH IN THE SUPPLY OF MONEY AND INFLATION

Monetarists frequently assert that inflation is always and everywhere a monetary phenomenon. Here we present data on the average rate of change in measures of prices and the money supply for a number of countries in our region and around the globe.

Country	Annual average growth rate (1990–97) GDP deflator	Money supply
United States	2.4	4.9
Canada	1.4	7.5
Australia	1.2	12.2
Japan	0.6	7.6
New Zealand	1.7	3.0
Denmark	1.9	5.9
Greece	12.2	16.6
Iceland	1.8	12.0
Norway	1.9	8.7
Switzerland	1.9	6.6
United Kingdom	3.2	10.4
South Africa	10.1	16.8
China, mainland	11.6	24.1
China, Hong Kong SAR	6.7	9.6
India	9.4	16.0
Indonesia	8.6	17.3
Korea	4.9	12.6
Malaysia	4.5	19.2
Pakistan	11.3	16.1
Philippines	8.6	16.1
Singapore	2.9	9.3
Thailand	4.8	12.0

SOURCE: International Monetary Fund, International Financial Statistics, *December 1999, and World Bank,* 1999 World Development Indicators.

Questions

1. Graph the data in the above table to show if a relationship exists between the rate of growth in the money supply and the rate of inflation. What is your conclusion regarding this relationship?
2. What does your answer to question 1 suggest about the validity of the quantity theory of money? Explain.
3. Why might changes in the supply of money not be highly correlated with the rate of increase in prices?

A CONTINUING DEBATE

Our discussion of the theoretical and policy issues raised by the classical school, monetarism, RET and supply-side economics only skims the surface; vigorous pursuit of these analytical and policy questions soon takes us to the murky frontiers of economic knowledge. Let us simply offer several concluding comments to put the current macroeconomic debate into perspective.

First, from an historical perspective Keynesian economics came to the fore in the late 1930s and dominated macroeconomic theory and policy through the 1950s and into the 1960s. It was then seriously challenged by monetarism in the 1960s and with greater vigour in the 1970s. The 1970s also gave birth to RET and its pointed critique of macro policy. The 1970s and 1980s also saw the rise of the ideas associated with the supply-side school of thought. All in all, a substantial battle of ideas was taking place with each providing a critique of the dominant Keynesian approach.

A second point is that most economists would agree that both Keynesianism and the monetarist version of the classical school are based on conceptual frameworks that are inherently plausible. Both theories provide useful frameworks within which the macroeconomy can be analysed and understood. Economists are in less agreement as to the full relevance and plausibility of RET. However, we must be aware that ideas that seem unrealistic and revolutionary at the outset have a habit of becoming plausible and orthodox in time, and many of the concepts of RET have been adopted by other schools of thought.

The controversy has been healthy in the sense that it has forced economists of all persuasions to rethink some of the very fundamental aspects of macroeconomics. And, as is true of most debates, some compromise and revision of positions have occurred. There are very few economists today who would embrace the extreme view that 'monetary policy does not matter' or the opposite extreme that 'only the money supply matters'. Thanks to the monetarists' emphasis on the crowding-out effect, economists and policy makers have become more fully aware of the need to coordinate fiscal and monetary policies. If fiscal policy generates a crowding-out effect of some magnitude that diminishes the effectiveness of fiscal policy, then it is obviously imperative that an appropriate monetary policy be applied simultaneously to negate any potential crowding-out of private investment.

Economists of all persuasions now stress both aggregate demand and aggregate supply in their analyses. And a legacy of RET is that economists and policy makers are much more sensitive as to how expectations might affect the outcome of a policy change. RET has also been helpful in stressing the links between microeconomics and macroeconomics. We are increasingly aware that what happens to the aggregate levels of output, employment and prices depends upon how individual product and resource markets function. We are also now focused to a greater degree on the incentive effects associated with the tax and transfer system. Thus monetarism, RET and supply-side ideas have all had a great impact upon macro theory and policy, although the mainstream view continues to display a significant Keynesian lineage.

Finally, we should note that we have only touched on some of the major schools of economic thought in this chapter. Here, we have discussed the views of the major schools that can have their ideas easily summarised within our simple aggregate demand – aggregate supply model. Some sub-schools from the family of economics, whose ideas have influenced the presentation of ideas in this book, are not identified separately but are associated with a synthesis of a general approach to economic analysis. Those schools that are not as readily modelled within the aggregate demand – aggregate supply framework, such as the Marxian and other more radical schools of thought, have not had their central themes or ideas discussed.

Concept highlights

- Although we have examined only those schools of economic thought that share a common usage of, or ability to be described within, the aggregate demand – aggregate supply framework, our discussion has provided us with an opportunity to see how the accepted ideas of the mainstream of economics have been influenced over time.
- This gives us an appreciation of the way in which we have progressed to our current models and focus in mainstream economics, including a focus on both the demand and supply aspects of the macroeconomy and the importance of expectations in determining equilibrium.

SUMMARY

1 Classical employment theory envisioned laissez-faire capitalism as being capable of providing virtually continuous full employment. This analysis was based on Say's law and the assumption of price–wage flexibility. The classical economists argued that because supply creates its own demand, general overproduction was impossible. This conclusion was held to be valid even when saving occurred, because the money market or, more specifically, the interest rate, would automatically synchronise the saving plans of households and the investment plans of businesses. Classical employment theory also held that even if temporary declines in total spending were to occur, these declines would be compensated for by downward price–wage adjustments to the end that real output, employment and real income would not decline.

2 Keynesian economic theory rejected the notion that the interest rate would equate saving and investment, by pointing out that savers and investors are substantially different groups who make their saving and investment decisions for different reasons—reasons that are largely unrelated to the interest rate. Further, because of changes in (a) the public's holdings of money balances and (b) bank loans, the supply of investment funds may exceed or fall short of current saving to the end that saving and investment will not be equal.

3 Keynesian economics discredits price–wage flexibility on both practical and theoretical grounds. Keynesians argue that union and business monopolies, minimum-wage legislation and related factors have virtually eliminated the possibility of substantial price–wage reductions, and that price–wage cuts will lower total income and therefore the demand for labour.

4 The Keynesian view is that the price system is largely non-competitive and is therefore permissive of macroeconomic instability. This contrasts with the classical and monetarist view that markets are highly competitive and conducive to macroeconomic stability. These contrasting views are reflected in different conceptions of the nature of the aggregate supply curve. The monetarists view the aggregate supply curve as being vertical at the full-employment level of output. The Keynesian view is that the aggregate supply curve is essentially horizontal up to the point of full employment, due to the presence of price–wage inflexibility.

5 To Keynesians, the basic determinant of real output, employment and the price level is the level of aggregate expenditures, hence their basic equation:

$C + I + G + NX$ = GDP. The components of aggregate expenditures are determined by a wide variety of factors which, for the most part, are unrelated to the supply of money. The basic equation of monetarism is the equation of exchange: $MV = PQ$. Because velocity V is basically stable, or on a stable long-term trend, the critical determinant of real output and employment (Q) and the price level (P) is the supply of money (M).

6 The Keynesian position is that because (a) government spending is a component of aggregate spending and (b) tax changes have direct and dependable effects upon consumption and investment, fiscal policy is a powerful stabilisation tool. Monetarists argue that fiscal policy is weak and uncertain in its effects. In particular, unless financed by an increase in the money supply, deficit spending will raise the interest rate and so crowd out private investment spending.

7 Keynesians argue that monetary policy entails a lengthy transmission mechanism, involving monetary policy decisions, bank reserves, the interest rate, investment and finally the nominal GDP. Uncertainties at each step in the mechanism limit the effectiveness and dependability of monetary policy. Money matters, but its manipulation through monetary policy is not a powerful stabilisation device as is fiscal policy. More specifically, the combination of a relatively elastic demand-for-money curve and a relatively inelastic investment-demand curve makes monetary policy relatively ineffective.

8 Monetarists believe that the steady long-term trend in V indicates a rather dependable link between the money supply and the money GDP. However, monetarists think that because of variable time lags in becoming effective and the incorrect use of the interest rate as a guide to policy, the application of discretionary monetary policy to 'fine-tune' the economy is likely to fail. In practice, monetary policy has tended to destabilise the economy. Monetarists therefore recommend a monetary rule where the money supply is increased in accordance with the long-term growth of real GDP.

9 Rational expectations theory (RET), also often known as the new classical economics, is based upon two basic assumptions:
- Consumers, businesses and workers understand how the economy works, are able to assess the future effects of policy and other changes, and adjust their decisions to further their own self-interests.
- Markets are highly competitive and adjust quickly to changes in demand and supply.

10 RET holds that, when the public reacts to the expected effects of stabilisation policy, the effectiveness of such policy will be negated. This new theory therefore supports policy rules as opposed to discretionary policy.

11 The criticisms of RET include the inability of people to access the information required to make decisions under RET; the presence of sticky prices over substantial periods; and the apparent success of interventionist economic policy in stabilising the economy in the post-World War II years.

12 Supply-side economists trace stagflation to the growth of the public sector, specifically the growing tax 'wedge' between production costs and product prices; the adverse incentive effects of the tax-transfer system; and overregulation of businesses. Each of these has had a detrimental impact on the aggregate supply curve and has both raised prices and reduced the equilibrium real level of GDP over time.

13 We have examined only those schools of economic thought that share a common usage of, or ability to be described within, the aggregate demand – aggregate supply framework. However, our discussion gives us an appreciation of the way in which we have progressed to our current models and focus in mainstream economics, including a focus on both the demand and supply aspects of the macroeconomy and the importance of expectations in determining equilibrium output, employment and prices.

KEY TERMS *and* CONCEPTS *to remember*



classical economics	424	price–wage flexibility	427
classical theory of employment	424	rational expectations theory (RET)	447
equation of exchange	436	Say's law	424
Keynesian economics	429	supply-side economics	451
Keynesian equation	436	tax-transfer disincentives	452
monetarism	436	tax 'wedge'	452
monetary rule	443	velocity of money	436
new classical economics	447		

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 Explain the classical economists' conclusion that Say's law would prevail even in an economy where substantial saving occurred. What arguments have modern economists used to undermine the classical view that Say's law would result in sustained full employment?

2 Explain: 'The debate between the Keynesians and the classical and monetarist schools is an important facet of the larger controversy over the role of government in our lives.'

3 State and explain the basic equations of Keynesianism and monetarism. Can you 'translate' the Keynesian equation into the monetarist equation?

4 What is the transmission mechanism for monetary policy according to (a) Keynesians? (b) monetarists? What significance do the two schools of thought apply to money and monetary policy as a determinant of economic activity?

5 According to monetarism, what happens when the actual supply of money exceeds the amount of money that the public wants to hold?

6 Why do monetarists recommend that a 'monetary rule' be substituted for discretionary monetary policy?

7 Explain: 'We cannot assess what monetary policy is doing by just looking at interest rates.' Indicate how an attempt to stabilise interest rates can be destabilising.

8 Indicate the precise relationship between the demand for money and the velocity of money.

9 Discuss in detail: 'The crucial issue separating Keynesians from monetarists is whether or not the demand for money is sensitive to changes in the rate of interest.'

10 Why is the elasticity—or shape—of the investment-demand curve important to the debate between the monetarists and the Keynesians?

11 Explain the Keynesian contention that a change in M is likely to be accompanied by a change in V in the opposite direction.

12 Explain how rational expectations might be an impediment to discretionary stabilisation policies. Do you favour discretionary policies or rules? Justify your position.

13 What are the criticisms of the rational expectations approach? Are these criticisms fair? Explain your reasoning.

14 What reasons do supply-side economists give to explain the leftward shifts in aggregate supply associated with stagflation?

Problems & exercises

1 Explain and evaluate these statements in terms of the controversy between Keynesians and monetarists:

(a) 'If the national goal is to raise income, it can be achieved only by raising the money supply.'

(b) 'The size of a federal budget deficit is not important. What is important is how the deficit is financed.'

(c) 'There is no reason in the world why, in an equation like $MV = PQ$, V should be thought to be independent of the rate of interest. There is every plausible reason for the velocity of circulation to be a systematic and increasing function of the rate of interest.'

(d) 'Monetarists assume that the PQ side of the equation of exchange is passive; the Keynesians argue it is active.'

2 Use the aggregate demand – aggregate supply model to sketch graphically the (a) monetarist (b) Keynesian and (c) rational expectations theories of the macroeconomy. Carefully compare the implications of each for public policy. In what respect, if any, does your RET portrayal differ from the 'old' classical model?

3 Use the aggregate demand – aggregate supply model to explain the consequences in terms of price level and real output of a decline in aggregate demand as envisioned by (a) classical economics and (b) Keynesian economics. Which model do you think is more realistic? Compare classical and Keynesian interpretations of the aggregate demand curve.

4 Show the implications of the supply-siders' arguments in the aggregate demand – aggregate supply framework. Do you think that tax-transfer disincentives have a short-run or long-run impact, or both? Explain.

Application & analysis

1 'Unemployment can be avoided so long as businesses are willing to accept lower product prices, and workers to accept lower wage rates.' Critically evaluate. Find examples of Australian policies and institutional arrangements that prevent these adjustments from occurring. Describe each.

2 How does the Reserve Bank of Australia view its implementation of monetary policy? Visit its website at:
http://www.rba.gov.au/

Move to the section of the site that discusses monetary policy. Whose policy ideas does the Reserve Bank of Australia follow—those of the monetarists or those of a Keynesian nature? Explain.

NOTES

1 Statement by Friedman in Milton Friedman & Walter Heller, *Monetary vs Fiscal Policy*, W. W. Norton & Company, New York, 1969, p. 51.

2 Lawrence S. Ritter & William L. Silber, *Money*, 4th edn, Basic Books, New York, 1981, p. 149.

A LAST WORD THE ROAD TO ANARCHY

Several of the schools of economic thought—most notably the new classical and monetarist schools—suggest that the economy is a largely self-regulating mechanism that will consistently tend towards equilibrium at the full-employment level of output. Given this natural tendency, government intervention is unwarranted at best, and at worst may inflict significant losses on the community through the unintended consequences of intervention. However, argues Hugh Stretton for the alternative viewpoint, it is a fantasy for government to believe that an ungoverned economy will bring efficiency.

Small government and free trade in goods and money are not behaving as advertised. So far they have entrenched high unemployment, trebled real interest rates, increased inequality, slowed investment and economic growth, and wrecked our balance of payments. The global economy calls for a radically different strategy. Warm-hearted critics from the churches and welfare services who reproach the government's meanness to the poor should also be attacking the incompetent policies that cause a lot of the poverty.

At the heart of the trouble is a fundamental mistake about the government's role in the economy. Economic rationalists theorise that—except for occasional market failures—an ungoverned economy would be ideally efficient. That fantasy implies, quite falsely, that most past public policies have reduced economic efficiency. In fact the twentieth century revolution in productivity owes as much to public as to private ingenuity. Efficient performance depends on intricate trade between the public and private sectors, sufficient investment in each, and pervasive good government of both. Shrinking the public sector does not expand private production: it normally reduces it. Deregulating the private sector does not usually increase national efficiency: it often reduces it. Most privatising worsens conditions of work and increases the long-term burden on taxpayers.

Where our national economic management is out of date, as some of it was by the 1970s, it needs to be reformed, not dismantled. Consider the economic costs of the new right policies that both sides of Parliament now support. First, money. Nobody made Keating deregulate our financial system. He had no mandate for it. And it is doing the opposite of each of the things he predicted it would do. It has trebled real interest rates. It has switched mortgage finance from poorer to richer home buyers. It has increased bank charges and profits, and allowed the banks to become big international gamblers for nobody's benefit but their own. It has reduced the funds available to Australian industry, and the proportion of those funds actually invested in productive industry. It has allowed the exchange rate to fluctuate more than ever.

And far from allowing market forces to equilibrate our foreign trade and payments, it has allowed them to run us deep into uncontrolled, self-accelerating foreign debt. Those disasters, rather than the ideal efficiencies of the economist's imagination, were what the previous rules were preventing, as Nugget Coombs and company well knew when they

designed those rules. Deficit-trading and capital-importing countries like ours have tried six ways of balancing foreign payments. Five of them don't work. Free trade is a winners' policy, and has never brought a deficit-trading, capital-importing country back into balance. Market depreciation of the currency rarely works, because it depends on the fairly unlikely elasticity of demand and supply. Without this it worsens the deficit, as it has done to all the OECD's deficit traders whose currencies have depreciated in recent times. Depressing total demand to reduce the demand for imports is a cruel and inefficient policy. Australia's marginal demand for imports is currently about one-third of whole marginal demand. That means that to spend a billion less on imports we must also do without two billions worth of our own output, put its producers out of work, and finance the dole for most of them. Financing the deficit by further borrowing, or by selling assets, puts off the crunch but makes it worse when it comes.

While our government and opposition join in implementing all of those ruinous policies ... we are on track for a Mexican crash. As the first rich Western defaulter, our punishment by the International Monetary Fund may be specially savage. The foreign lenders charge us high interest. We used to insulate our own business from foreign rates by regulating our own rates, and preventing undue debt or capital flight by regulating Australian institutions' foreign lending and borrowing. But now we let the foreign rates run throughout our economy.

Since we stopped regulating the quantity and some of the uses of bank credit, high interest is also the government's main weapon against inflation. It works by discouraging investment and employment. What is less widely understood is that it also cuts the average productivity of the investment that does occur. In the most competitive industries, new, small and fast-growing firms depend more than most of their competitors on long-term credit for their capital needs. But in those industries no competition can afford to include high interest costs in their pricing. So funds switch to less competitive industries or short-term speculative and asset-trading uses, or they go abroad. Both socially and economically, rationing by price, i.e. by the rate of interest, is the very worst way to allocate credit.

Next is the theory (or for many predators, the pretence) that cutting wages, job security and welfare will attract investment, motivate work, cause growth and reduce unemployment. The theory is wrong, and flatly contradicted by Western experience. Falling wages and welfare cuts have sometimes increased unemployment but never reduced it. Insecure workers are rarely the best workers, and often the worst. In the few industries in which anxious insecurity can intensify the exploitation of labour, it does not follow that a rich and peaceful country should encourage it. Margins of work satisfaction and security may be worth more than margins of consumption and inequality.

What could we do to stop the rot? Some painful emergency action ... would be needed to reverse the self-accelerating element of the exchange deficit. In the longer run, to allow full or fairly shared employment without unacceptable risks, government needs a capacity to balance our foreign payments without resorting to high interest or deliberate unemployment. We need to regulate the volume and directions of bank credit directly, rather than by manipulating the rate of interest. We need to finance adequate public investment and services without borrowing from private banks. We need to nurture our manufacturing capacity. Internationally, we should change sides and argue hard for national rights, subject to some fair trading rules, to avoid unemployment and excessive foreign debt. Public employers must be chiefly responsible for full employment. Much private growth does not create jobs. There is no reason to expect that growth will distribute private demand between labour-saving and labour-intensive industries in full-employment proportions—it has not been doing so for some time now.

But there are genuine needs for labour-intensive social, educational, medical, environment and business services, mostly public ... The theory of inevitable government failure is rubbish. Plenty of government is imperfect—but private enterprise is a mess or a menace without it, as often seen in South America and Central Africa, and now in Russia. All economic activity needs appropriate government, much of it tailored to the needs of particular industries and markets. We must simply design it and do it as well as we can. And we need to restore history to the education of our elite, before they expose us to the full economic anarchy that allowed the financial collapse of the 1890s and the 30 per cent unemployment of the 1930s.

SOURCE: H. Stretton, Age, *2 September 1996.*

Questions

1. In which areas do you think that Stretton's comments still appear valid now that we are in the 2000s? Which of the problems highlighted in his article still exist for Australia today? Discuss each of these.
2. Do you agree with Stretton's views about the false hopes often associated with economic reform and the reduction of government's role in the economy? Explain.
3. Into which school of economic thought would you place yourself? Into which school of economic thought would you place Stretton? Why?
4. Stretton provides a significant critique of market-based economic policies. What solutions does he propose to remedy the evils that he sees in these policies? Discuss.



Chapter 14 INFLATION

INTRODUCTION

In Chapter 13 we presented a brief overview of alternative schools of macroeconomic thought. The 'mainstream' version of economics that we presented in Chapters 6 to 12 has incorporated considerable insights from each of the schools, including rational expectations theory. However, substantial disagreement still exists in economics about the degree to which the economy is inherently unstable and the effectiveness of stabilisation policies.

This chapter extends our discussion of modern macroeconomic theories and debates. Here we examine explanations of the simultaneous occurrence of inflation and unemployment and, by focusing on expectations, deepen our understanding of the operation of the economy.

LEARNING OBJECTIVES

- **Derive and examine the so-called Phillips curve.**
- **Discuss whether there is any apparent trade-off between unemployment and inflation.**
- **Examine the natural rate hypothesis and use it to analyse Australia's experiences with stagflation.**
- **Explore the links between the Phillips curve model and our model of aggregate supply.**
- **Discuss demand-pull and cost-push inflation in light of our understanding of the Phillips curve.**

INTRODUCTION TO THE PHILLIPS CURVE

Before we start our analysis of the Phillips curve, we need a quick review of the development of our analysis of the macroeconomy. This will allow us to better understand the description and analysis of the Phillips curve.

ANALYTICAL BACKGROUND

The analysis of Chapters 6 and 7 focused on aggregate expenditures as the fundamental determinant of real domestic output and employment. This simple model implies that the economy may realise either unemployment—a recessionary gap—or inflation—an inflationary gap. However, the model was unable to analyse the simultaneous occurrence of both unemployment and inflation—stagflation. This reflects the Keynesian heritage of the aggregate expenditures model—it is designed to reflect the situation where considerable slack exists in the economy.

In terms of the aggregate demand – aggregate supply framework that we discussed in Chapters 8 to 12, the aggregate expenditures approach assumes an aggregate supply curve in the shape of a 'reverse L'. Over the horizontal range, increases in aggregate demand will increase real output and employment at constant prices until full employment is achieved. Further aggregate demand increases in the vertical range will have no effect on real output, but will only cause inflation. Presumably some 'right' level of aggregate demand that intersects the aggregate supply curve precisely at the kink of the 'reverse L' would give us the possibility of the best of all possible macroeconomic worlds; society could enjoy full employment and price level stability simultaneously.

HISTORICAL BACKGROUND

In the view of many economists, the Keynesian or aggregate expenditures styles of model provided an acceptable explanation of the economy's macroeconomic behaviour over the four decades prior to the 1970s. The 1930s depression and most of our macroeconomic ups and downs in the 1950s and 1960s could be interpreted and understood reasonably well within the context of these models' analyses. But this situation changed in the 1970s. The coexistence of inflation and unemployment—indeed, the simultaneous occurrence of increasing unemployment and a rising price level, stagflation—became common, and the central macroeconomic problem of the 1970s and early 1980s. Specifically, there were two serious stagflationary episodes, 1972–73 to 1974–75 and 1980–81 to 1982–83, that are not readily explainable in terms of the aggregate expenditures or Keynesian models or, indeed, through the monetarist view described in Chapter 13. These unfortunate periods can be understood, however, by:

1. explicitly taking into account the more realistic up-sloping shape of the short-run aggregate supply curve
2. allowing for leftward shifts of the short-run aggregate supply curve.

THE PHILLIPS CURVE

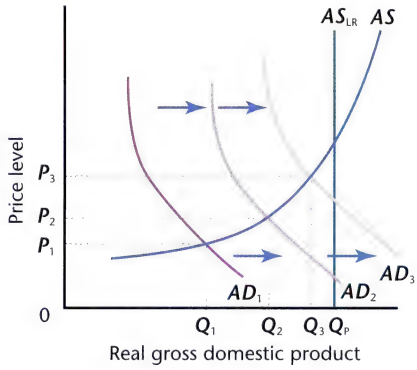
The aggregate supply – aggregate demand model is shown in Figure 14.1. You will recall that the aggregate demand curve slopes downwards as a result of the wealth, interest-rate, and foreign-purchases effects (see Chapter 8). With respect to the aggregate supply curve, we know from Chapter 8 that the slope of the **short-run aggregate supply curve** depends on what happens to production

costs as real domestic output rises—under the assumption of fixed wages. The intersection of the aggregate demand and aggregate supply curves determines real domestic output—and employment—on the one hand, and the price level, on the other.

In Figure 14.1 we perform a simple mental experiment. Suppose that in some given year aggregate demand expands from AD_1 to AD_2. This shift might result from a change in any one of the determinants of aggregate demand discussed in Chapter 8. For example, businesses may decide to buy more investment goods or government may decide to increase its expenditures. As a result of this shift, we observe that the price level rises from P_1 to P_2 while real output expands from Q_1 to Q_2.

FIGURE 14.1
The effect of changes in aggregate demand on real domestic output and the price level

Comparing the effects of various possible increases in aggregate demand yields the conclusion that the larger the increase in aggregate demand, the greater the resulting inflation and the greater the increase in real domestic output to the point that full employment is achieved. Because real domestic output and the unemployment rate are inversely related, we can generalise that, given short-run aggregate supply, high rates of inflation should be accompanied by low rates of unemployment.



Now let us compare what would have happened if the increase in aggregate demand had been larger, say from AD_1 to AD_3. The new equilibrium tells us that both the amount of inflation and the growth of real output would have been greater (and the unemployment rate smaller). Similarly, suppose aggregate demand in our given year had only increased modestly from AD_1. If you plot an additional aggregate demand curve in Figure 14.1 you will find that, as compared with our original AD_1 to AD_2 shift, the amount of inflation and the growth of real output would have been smaller (and the unemployment rate therefore larger).

The generalisation embodied in this mental experiment is obvious—the greater the rate of growth of aggregate demand, the greater the resulting inflation and the greater the growth of real GDP—and the lower the unemployment rate. Conversely, the slower aggregate demand grows, the smaller will be the resulting inflation and the slower the growth of real GDP—and the higher the unemployment rate.

More simply stated, our generalisation is that high rates of inflation should be accompanied by low rates of unemployment, and vice versa. Figure 14.2(a) shows us what the expected relationship should look like.

Phillips curve: an inverse relationship, suggestive of a trade-off, between inflation and the unemployment rate, apparent in some of the empirical work performed by economists in the late 1950s and 1960s.

Do the facts fit the theory? Pioneering empirical work by economists in the late 1950s and 1960s seemed to verify the existence of this inverse relationship, which came to be known as the **Phillips curve**—after the New Zealand-born economist A. W. Phillips. Thus, for example, Figure 14.2(b) shows the relationship between the unemployment rate and the rate of inflation for the 1960–69 period in Australia. The line generalising on the data portrays the expected inverse relationship.

On the basis of this kind of empirical evidence, economists believed that a stable, predictable trade-off existed between unemployment and inflation. Further, Australia's economic policy was based upon the existence of this trade-off. Let us consider the logic underlying the Phillips curve and then discuss why the indicated relationship seemed to break down in the 1970s and early 1980s.

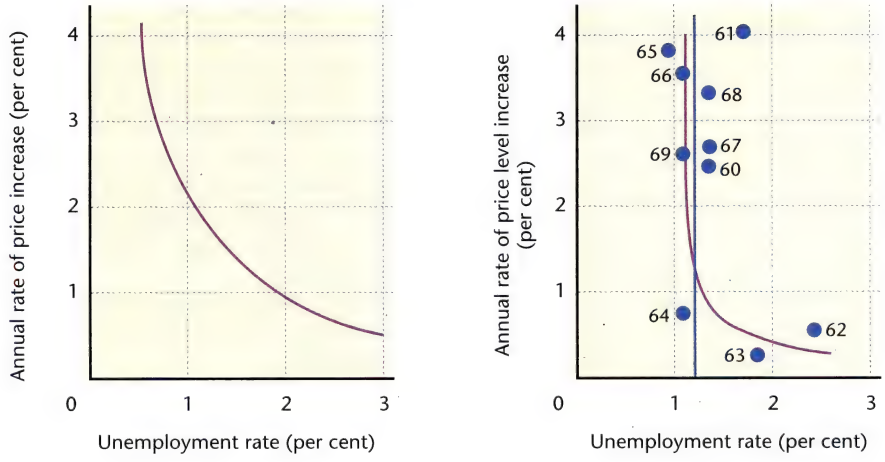


FIGURE 14.2
The Phillips curve: concept and data

The Phillips curve purports to show a stable relationship between the unemployment rate and the rate of inflation. Because this relationship is inverse, there is presumably a trade-off between unemployment and inflation. Data points for Australia in the 1960s seemed to confirm the Phillips curve concept.

LOGIC OF THE PHILLIPS CURVE

How can the Phillips curve be explained? What causes the unfortunate trade-off between full employment and price level stability? Basically, there are two sets of complementary considerations that explain premature inflation. Given our derivation of the Phillips curve concept it is no surprise that the factors underlying the Phillips curve are those used to explain the shape of the short-run aggregate supply curve.

LABOUR MARKET IMBALANCES

A partial explanation lies in certain imbalances—'bottlenecks' and structural problems—that arise in labour and other resource markets as the economy expands towards full employment. The basic point here is that 'the' labour market in Australia in fact comprises an extremely large number of individual labour markets that are stratified and distinct—distinct occupationally and sometimes geographically. This labour market diversity suggests that, as the economy expands, full employment will not be realised simultaneously in each individual labour market. While full employment and labour shortages may exist for some occupations and some areas, unemployment will persist for other occupations and regions. This disparity means that in an expanding economy, even though the overall unemployment rate may be 7 or 8 per cent, scarcities will develop for specific kinds of labour, and for labour in certain geographical areas; the wage rates of such workers will rise as new contracts are made and negotiated. Rising wage rates mean higher costs and necessitate higher prices. The net result is rising prices, even though the economy as a whole is still operating short of full employment.

It is fair to ask why labour market adjustments do not eliminate these bottleneck problems. Why, for example, do unemployed labourers not become craft workers? The answer, of course, is that such shifts cannot be made with sufficient speed to eliminate labour market bottlenecks. The training for a new occupation is costly in terms of both time and money. Even if a worker has the ability, time and money to acquire the needed skills and to relocate, an

unemployed labourer in one area may just not be aware of the shortage of skilled craft workers elsewhere. Further, social and family considerations may also constrain labour from relocating either easily or rapidly.

Artificial restrictions upon the mobility of workers may also sustain structural imbalances. For example, discrimination on the basis of race, ethnic background or sex can keep qualified workers from acquiring available positions. Lack of recognition of qualifications gained overseas is a considerable impediment to many of our immigrants. Similarly, licensing requirements and restrictions on the number of available apprenticeships inhibit the levelling out of imbalances between specific labour markets.

In brief, labour market adjustments are neither sufficiently rapid nor complete enough to prevent production costs and product prices from rising before overall full employment is achieved.

MARKET POWER

A complementary explanation of the Phillips curve is based on the assumption that labour unions and big businesses both possess significant amounts of monopoly or market power with which to raise wages and prices and that this power becomes easier to exert as the economy approaches full employment. Hence, the 'wage-push' inflationary scenario goes something like this: as the economy moves towards full employment, labour markets tighten and unions become more aggressive in their wage demands. Further, increasing prosperity tends to enhance the willingness of businesses to grant union wage demands. On the one hand, firms hesitate to resist union demands and risk a costly strike at the very time when business activity is becoming increasingly profitable. On the other hand, economic expansion provides a favourable environment in which monopoly power can be used to pass wage increases on to consumers in the form of higher product prices.

Alternatively, market-power inflation may be 'profit-push'; that is, inflation may be initiated by businesses as they seek higher profit margins. Large companies that have the ability to manipulate or administer their prices may decide to increase prices to expand profits. Whether wage-push, profit-push or some combination of the two is responsible, the result is a rising price level in the absence of excess aggregate demand.

STABILISATION POLICY DILEMMA

If the Phillips curve remains fixed as in Figure 14.2, policy makers are faced with a dilemma. Traditional fiscal and monetary policies simply alter aggregate demand and therefore do nothing to correct the labour market imbalances and the market power that produce premature inflation. More specifically, the manipulation of aggregate demand through fiscal and monetary measures simply has the effect of moving the economy along the given Phillips curve. Hence, the expansionary fiscal policy and the easy money policy that combine to boost aggregate demand and achieve a lower rate of unemployment will simultaneously generate a higher rate of inflation. Conversely, a restrictive fiscal policy and a tight money policy can be used to reduce the rate of inflation, but only at the cost of a higher unemployment rate and more forgone production.

Demand-management policies can be used to choose a point on the Phillips curve, but such policies do not improve upon the 'unemployment rate – rate of inflation' menu embodied in the Phillips curve. Given the presence of the Phillips curve, it is impossible to achieve full employment without inflation.

SOME COMPLICATIONS

Despite the logical accuracy of our derivation of the Phillips curve concept and the accompanying empirical data for the 1960s, which seem to confirm an inverse relationship between unemployment and inflation rates, the Phillips curve has been highly controversial. Let us note two complications prior to examining the events of the 1970s.

THE REVERSIBILITY PROBLEM

Note, first, that our use of aggregate demand – aggregate supply analysis to derive the Phillips curve concept was couched in terms of *increases* in aggregate demand. This raises the question as to whether the analysis works in reverse. The implied 'catch', of course, is that the price level is readily flexible upwards, but may be quite inflexible downwards. You will recall the discussions of downward price and wage inflexibility in Chapter 8 and the 'ratchet effect'. The rate of inflation rises much more readily than it falls. This means that, while an increase in aggregate demand is likely to increase the rate of inflation and reduce the rate of unemployment—that is, to move the economy up the Phillips curve—a decrease in aggregate demand is unlikely to follow the same path back down the Phillips curve. Assuming prices are quite inflexible downward, a decrease in aggregate demand is likely to generate little or no decline in the inflation rate, but a substantially larger increase in the unemployment rate than the Phillips curve would suggest.

AGGREGATE SUPPLY SHIFTS

The second point is that our derivation of the Phillips curve concept did not take into account the possible effects of changes in short-run aggregate supply. If, for example, in the given year when we mentally experimented with increases in aggregate demand of various sizes, the short-run aggregate supply curve had shifted leftwards for some reason, our tidy inverse relationship between the inflation rate and the unemployment rate would have been upset. Specifically, for any of the increases in aggregate demand, we would have had more inflation and a smaller increase in real output (a higher unemployment rate). Indeed, a very substantial leftward shift of aggregate supply might yield a higher rate of inflation, accompanied by a decrease in real domestic output and, therefore, an increase in the unemployment rate.

Concept Highlights

- Using the aggregate demand – aggregate supply model to compare the impacts of small and large increases in aggregate demand upon the price level and real output yields the generalisation that high rates of inflation should be associated with low rates of unemployment, and vice versa. This inverse relationship is known as the Phillips curve, and empirical data prior to the 1970s were generally consistent with this inverse relationship.
- Labour market imbalances and monopoly power are used to explain the apparent Phillips curve trade-off between inflation and unemployment as we move along the short-run aggregate supply curve.
- The Phillips curve relationship is complicated by:
  - downward price–wage inflexibility when aggregate demand declines—the 'ratchet' effect
  - shifts in short-run aggregate supply, which affect the rate of inflation at which the apparent trade-off between inflation and unemployment occurs.

STAGFLATION: A SHIFTING PHILLIPS CURVE?

Stagflation: the simultaneous experience of both high and increasing unemployment and inflation.

Events of the 1970s and early 1980s were clearly at odds with the trade-off between the inflation rate and unemployment rate embodied in the Phillips curve. Figure 14.3 enlarges on Figure 14.2(b) by adding data covering the entire 1949–50 to 1998–99 period in Australia. The relatively clearcut inverse relationship of the 1961–69 period now becomes obscure and highly questionable. Note in Figure 14.3 that for much of the 1970s the economy experienced both more inflation and more unemployment or, in a word, **stagflation**.

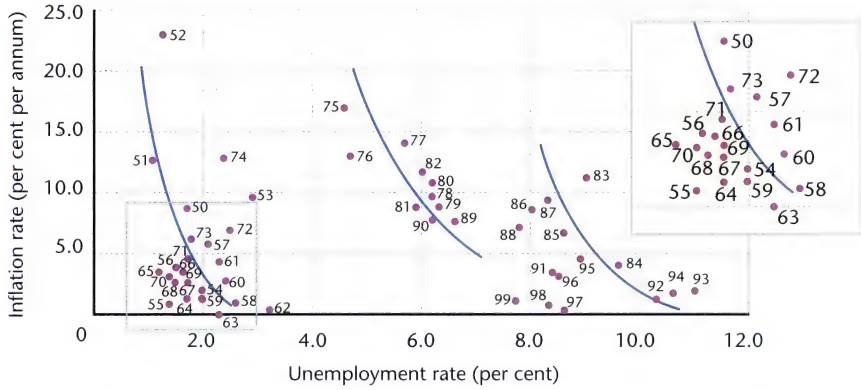


FIGURE 14.3
Stability of the Phillips curve

Data points for 1949–50 to 1998–99 suggest no clear relationship between unemployment rates and rates of inflation. This raises questions about the stability or existence of the Phillips curve. Some economists feel the curve has shifted to the right since the 1960s, as suggested by the blue curves.

SOURCE: Reserve Bank of Australia, Australian Economic Statistics *1949–50 to 1994–95, and Reserve Bank of Australia,* Bulletin, *various issues.*

Trace, for example, the data points for the 1973–77 period. At best, these data suggest that the Phillips curve was shifting to the right—that is, to a less desirable position where any given level of unemployment is accompanied by more inflation or, alternatively stated, each level of inflation is accompanied by more unemployment. At worst, the data suggest that there is no dependable trade-off between unemployment and inflation. The same can be said for the 1981–83 period.

More recently, in the late 1990s, we have seen significant falls in the level of unemployment but strong growth. However, any trade-off between unemployment and inflation would still seem to be centred around much higher rates of unemployment than in the 1960s.

AGGREGATE SUPPLY SHOCKS

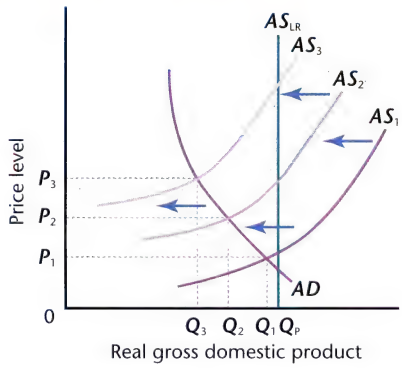


FIGURE 14.4
Aggregate supply and stagflation

In the 1972–75 period, a series of supply-side shocks, including the 'wages explosion' and increased energy costs, shifted the aggregate supply curve leftward. The result was stagflation—a higher price level accompanied by a decline in real output. A similar scenario occurred in the 1980–83 period.

What happened to cause bouts of stagflation in the 1970s and early 1980s? The answer is that a series of cost shocks or **aggregate supply shocks** occurred. And the fact that these disturbances arose on the cost or supply side makes a difference. Remember that the inverse relationship between the rate of inflation and the unemployment rate shown in Figure 14.2(a) was derived by changing the level of aggregate demand along a fixed aggregate supply curve in Figure 14.1.

Aggregate supply shocks: sudden changes in one or more of the determinants of supply, for example the OPEC oil shocks, leading to rapid changes in supply conditions affecting real GDP, the price level and employment.

Now look at our cost-push inflation model that we have repeated as Figure 14.4. Here we find that a decrease (leftward shift) of aggregate supply causes the unemployment rate and the price level to vary *directly*; that is, both increase to give us stagflation. This is essentially what happened during the period 1973–75 and again in 1980–83. There was a series of more or less random shocks that caused production costs to move upwards, including the wages explosion of 1974–75, severe increases in fuel costs and sudden devaluations of the Australian dollar. However, the stagflation episodes that have been experienced were not due solely to such dramatic supply-side shocks. More subtle considerations, involving productivity and expectations, have also been at work.

PRODUCTIVITY DECLINE

The rate of growth of labour productivity—that is, the efficiency of labour—began to decline in the 1970s and continued to fall, on average, throughout the 1980s and early 1990s. Table 14.1 provides information on this decline. This fall in productivity growth tended to increase production costs.

Table 14.1 Changes in the rate of productivity growth

Five-year period ended	Average per annum growth rate of output per hour worked (%)
1970–71	3.1
1975–76	3.0
1980–81	2.2
1985–86	2.2
1990–91	0.2
1995–96	1.8
1998–99	2.3

SOURCE: Calculated from ABS Cat. No. 5206.0.

Why did labour costs increase? The answer is that an increase in unit labour costs—that is, labour cost per unit of output—is equal to the difference between the increase in nominal wage rates and the increase in labour productivity. More precisely:

$$\begin{array}{c}\text{percentage change in unit labour costs}\end{array} = \begin{array}{c}\text{percentage change in nominal wage rates}\end{array} - \begin{array}{c}\text{percentage change in labour productivity}\end{array}$$

For example, if hourly nominal wages are currently \$10 and a worker produces 10 units per hour, then unit labour costs will be \$1.

Now, if nominal wages increase by 10 per cent to \$11 per hour and productivity also increases by 10 per cent to 11 units per hour, then unit labour costs will be unchanged; that is, $\frac{\$10}{10} = \frac{\$11}{11} = \$1$. In terms of our equation, 10 per cent (change in nominal wages) minus 10 per cent (change in productivity) equals no increase in unit labour costs.

Similarly, if nominal wages were to rise by 10 per cent and labour productivity did not rise at all, unit labour costs would rise by 10 per cent; that is, if the wage

rate was $10 initially and output per hour was 10 units, labour costs would be $1. But with wages now $11 and output still at 10 units per hour, unit labour costs would now be $1.10, which is a 10 per cent increase. In our equation, 10 per cent minus zero per cent equals a 10 per cent increase in unit labour costs. Since labour costs are 70 to 80 per cent of total production costs, it is no surprise that product prices rise roughly in accord with increases in unit labour costs.

What our simple equation tells us of relevance for stagflation is that, given the size of nominal wage increases, a decline in the rate of growth of labour productivity will boost production costs and contribute to an adverse shift in the aggregate supply curve.

INFLATIONARY EXPECTATIONS AND WAGES

The inflation of the 1970s had its genesis in the inflation of the late 1960s. Hence, by the early 1970s workers had been exposed to a period of accelerating inflation. As a result, the nominal wage demands of labour began to embody the expectation of an increasing rate of inflation. Most employers, expecting to be able to pass on higher wage costs in this context of mounting inflation, did not resist labour's demands for larger and larger increases in nominal wages. The culminating wages explosion and demands for larger and larger nominal wage increases obviously increased production costs and tended to shift aggregate supply from AS_1 to AS_2 in Figure 14.4.

Inflationary expectations: expectations about the likely future path and rate of increase of the general level of prices.

Indeed, our equation is an appropriate vehicle in which to incorporate both **inflationary expectations** and *declining labour productivity* as causes of stagflation. If nominal wages are being pushed up at an accelerating rate by organised labour, and the growth rate of labour productivity is simultaneously falling, there is a double impetus for unit labour costs—and ultimately product prices—to rise.

SYNOPSIS

All of these factors combined to shift the aggregate supply curve adversely to yield the worst possible macroeconomic world—falling output and rising unemployment, combined with a rising price level (see Figure 14.4). The numerical dimensions of the 1973–75 stagflation are quite remarkable. The unemployment rate shot up from 2.5 per cent in 1972–73 to 4.6 per cent in 1975–76. In the same period the inflation rate went from 6 to 13 per cent, reaching 16.7 per cent in 1974–75!

Like a bad dream, the 1973–75 stagflation scenario recurred in essence in 1980–83. In this case inflation grew from 10 to nearly 12 per cent, while the unemployment rate escalated from around 6 to over 9 per cent. Meanwhile, from 1981–82 to 1982–83 real output actually fell!

Regardless of the causes of stagflation, it was quite clear to most economists in the late 1970s and early 1980s that the Phillips curve was not a stable relationship that could be depended upon as a basis for economic policy. Downward price inflexibility seemed to push the economy rightwards off the curve when policies were used to restrain aggregate demand. And there was compelling evidence that adverse—leftward—shifts in aggregate supply were at work, which seemed to explain those unhappy occasions when the inflation rate and the unemployment rate increased simultaneously. To many economists, the experience during the 1970s and the early 1980s suggested that the Phillips curve was shifting to the right and confronting the economy with higher rates of inflation and unemployment than had previously been the case.

At this point in time, this view of the Phillips curve would seem to have left Australian policy makers with an unattractive range of menu options from which

to choose in the trade-off between inflation and unemployment. Figure 14.3 suggests that to maintain a low level of inflation, say less than 5 per cent, the government would have to have accepted very high rates of unemployment—above 9 per cent—for sustained periods.

Concept highlights

- Stagflation represents the simultaneous experience of both high and increasing unemployment and inflation. The presence of stagflation suggests that the apparent trade-off between inflation and unemployment posited by the original Philips curve has broken down.
- In the 1970s the Phillips curve seems to have shifted rightwards, a shift consistent with the observance of stagflation. A series of supply-side shocks was involved. More subtle factors—inflationary expectations and a decline in the rate of productivity growth—also contributed to stagflationary tendencies. This suggested that the trade-off between unemployment and inflation had shifted and was now centred around a higher rate of unemployment.

Business IMPLICATION

INFLATION AND EFFICIENCY

Why have we seen the macroeconomic focus shift to inflation for many central banks and governments during the 1990s and 2000s? Inflation can impose many real economic costs on the community. These include the erosion of the value of savings, discouraging a provision for the future; the need to continually replace price lists, a menu expense; and the reduction of the real incomes received from the sale of products or provision of services, leading to the need to re-negotiate contracts. Each of these erodes the efficiency with which societies' resources are allocated, or requires the use of additional resources as a remedy. Additionally, high rates of inflation reduce the efficiency of the price mechanism in signalling the need to shift resources between activities. Business must ask: are price rises a general feature of the economy or a signal of changes in our market? The implication: a focus on inflation reduces the waste of resources associated with continually trying to catch up with generally rising prices and allows a greater focus on business activity and efficiency.

THE NATURAL RATE HYPOTHESIS

Natural rate hypothesis: the suggestion that there is a unique level of unemployment around which observed unemployment will fluctuate, but that the economy will tend towards at any point in time.

We have seen that one explanation for the scattering of inflation-rate and unemployment-rate dots to the right of the 1960s Phillips curve is that a series of supply-side shocks occurred that shifted the Phillips curve rightwards, as suggested in Figure 14.3. This view indicates that there still exists a trade-off between the inflation rate and the unemployment rate, but the menu of choices is less desirable than it was in the 1960s.

A second explanation of simultaneous higher rates of unemployment and inflation, the **natural rate hypothesis**, is associated with 'new' classical thinking (see Chapter 13). It questions the very existence of the concept of a down-sloping Phillips curve as portrayed in Figure 14.2(a). This view concludes that the economy is stable in the long run around its potential output level. You will recall from Chapter 5 that this is the level of output corresponding to the natural or full-employment rate of unemployment.

According to the natural rate hypothesis, full-employment policies, based upon the incorrect assumption that the Phillips curve does exist, will result in an accelerating rate of inflation. The natural rate hypothesis has its empirical roots in Figure 14.3. We can argue that a vertical line located at, say, the 6 per cent unemployment rate summarises the unemployment–inflation 'relationship' as well as, or perhaps better than, the traditional down-sloping Phillips curve. According to the natural rate hypothesis, any particular rate of inflation is compatible with the natural rate of unemployment.

There are two variants of the natural rate interpretation of the inflation–unemployment data shown in Figure 14.3: the adaptive expectations and rational expectations theories.

ADAPTIVE EXPECTATIONS THEORY

Theory of adaptive expectations: assumes that people form their expectations of future inflation on the basis of previous and present rates of inflation, and only gradually change their expectations as experience unfolds; thus expectations are backwards-looking, suggesting that continuous forecast errors will be made.

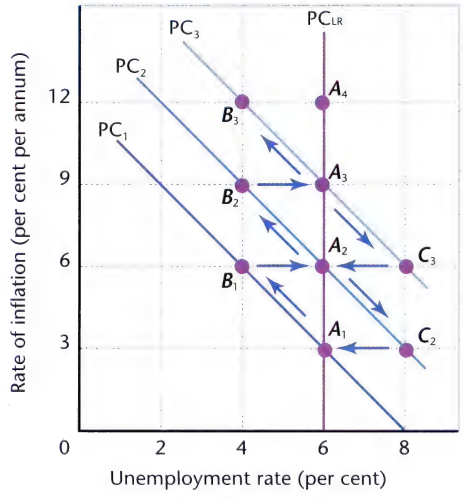
One variant of the natural rate hypothesis is the **theory of adaptive expectations**. The theory is so named because it assumes that people form their expectations of future inflation on the basis of previous and present rates of inflation, and only gradually change their expectations as experience unfolds. This theory was advanced and popularised by Milton Friedman and is consistent with both the monetarist and new classical schools of thought.

The adaptive expectations theory holds that there may be a short-run trade-off between inflation and unemployment, but in the long run no such trade-off exists. Any attempt to reduce unemployment by moving up the down-sloping Phillips curve sets in motion forces that make that curve unstable and shift it rightwards. Thus the adaptive expectations theory distinguishes between a short-run and long-run Phillips curve.

SHORT-RUN PHILLIPS CURVE

FIGURE 14.5
The adaptive expectations theory

An expansion of aggregate demand may temporarily increase profits and, therefore, output and employment (A_1 to B_1). But money wages will soon rise, reducing profits and thereby negating the short-run stimulus to production and employment (B_1 to A_2). Consequently, in the long run there is no trade-off between the rates of inflation and unemployment; the long-run Phillips curve is vertical. This suggests that expansionary policies will generate accelerating inflation rather than a lower rate of unemployment. On a more positive note, it also suggests that restrictive stabilisation policies can reduce inflation without generating permanent increases in unemployment.



In Figure 14.5 consider Phillips curve PC_1. Assume that the economy is experiencing a low level of inflation of 3 per cent and has a natural rate of unemployment of 6 per cent (as shown by point A_1). According to the adaptive expectations theory, short-run curves such as PC_1 exist because the actual rate of inflation is not always the same as the expected rate.

But suppose the government mistakenly believes that the natural rate of unemployment is 4 per cent rather than 6 per cent. This could occur because the economy temporarily operated at this lower rate of unemployment in an earlier period. To achieve the targeted rate of unemployment of 4 per cent, assume that the government conducts expansionary fiscal and monetary policies.

The resulting increase in aggregate demand pulls up the rate of inflation and, given the level of money or nominal wages, which were set on the expectation that inflation would remain at 3 per cent, the higher product prices increase business profits. Firms respond to expanded profits by increasing output and therefore hiring additional workers. In the short run the economy thus moves to point B_1 which, in contrast with A_1, obviously entails a lower rate of unemployment (4 per cent) along with a higher rate of inflation (6 per cent).

This A_1 to B_1 shift, you will note, is consistent with our earlier conception of the Phillips curve. Presumably, the economy has accepted some inflation as the 'cost' of achieving a reduced level of unemployment. But, according to the natural rate hypothesis, point B_1 is not a stable equilibrium position. Rather, it is a temporary demonstration of the following principle—when the actual rate of inflation is higher than the expected rate of inflation, the unemployment rate will fall.

LONG-RUN VERTICAL PHILLIPS CURVE

The reason that point B_1 is not a stable equilibrium position, according to adaptive expectations theory, is that workers will recognise that *their* real wages and income have fallen. Their *nominal* wages have not increased at the same rate as the level of product prices, reducing their purchasing power. Workers will therefore demand and receive nominal wage increases to restore the purchasing power they have lost. But, as nominal wages rise to restore the previous level of real wages that existed at A_1, business profits will be reduced to their earlier level. This profit reduction means that the original motivation of businesses to increase output and employ more workers will disappear.

The consequence? Unemployment returns to its original 6 per cent level at point A_2. Note, however, that the economy is now faced with a higher actual and expected rate of inflation—6 per cent rather than 3 per cent. The higher level of aggregate demand that originally moved the economy from A_1 to B_1 still exists and, hence, the inflation that is created will persist.

In brief, an along-the-Phillips-curve kind of shift from A_1 to B_1 is merely a short-run or transient phenomenon. In the long run—that is, after money wages catch up with price level increases—unemployment will return to the normal rate at A_2.

The process may now be repeated. Government may reason that certain extraneous, chance events have frustrated its expansionist policies. Hence, government tries again. Policy measures are used to increase aggregate demand, and the scenario repeats itself. Prices rise momentarily ahead of money wages, profits expand, and output and employment increase (A_2 to B_2). But, in time, workers press for, and are granted, higher nominal wages to restore their level of real wages. Profits, therefore, fall to their original level, causing employment to gravitate back to the normal rate of A_3. Government's 'reward' for trying to force the actual rate of unemployment below the natural rate is the perverse one of a still higher (9 per cent) rate of inflation!

If we conceive of A_1B_1, A_2B_2, A_3B_3 and so on as indicating a series of short-run Phillips curves, the adaptive expectations view says that, ironically, government attempts through policy to move along the short-run Phillips curve (A_1 to B_1 on PC_1) will *cause* the curve to shift to a less favourable position (PC_2, then PC_3, and so on). In other words, a stable Phillips curve, with the dependable series of trade-offs between the unemployment rate and inflation rate that it implies, simply does not exist.

There is, in fact, no stable rate of inflation (such as 6 per cent at B_1) that can be accepted as the 'cost' of reduced unemployment (6 per cent to 4 per cent) in the long run. To keep unemployment at the desired 4 per cent level, government must continuously expand the level of aggregate demand. The 'cost'

of a 4 per cent unemployment rate is not a constant 6 per cent annual rate of inflation at B_1, but rather an accelerating rate of inflation—that is, an annual rate of inflation that increases from 6 per cent (B_1) to 9 per cent (B_2) to 12 per cent (B_3) and so on. Stated differently, the long-run relationship between unemployment and inflation is shown by the vertical line through A_1, A_2, A_3 and A_4. The Phillips curve, as portrayed earlier in Figure 14.2, does not exist, and any stable rate of inflation is consistent with the natural rate of unemployment.

DISINFLATION

Disinflation: reductions in, or elimination of, the rate of inflation

The adaptive expectations scenario can be employed to explain **disinflation**—reductions in, or elimination of, the rate of inflation—as well as inflation itself. Suppose in Figure 14.5 that the economy is at point A_3 where the inflation rate is 9 per cent and the economy is at its natural rate of unemployment of 6 per cent. A significant decline in aggregate demand such as that associated with the 1990–91 recession can be expected to reduce inflation below the 9 per cent rate, to, say, 6 per cent. Business profits will fall because product prices are rising less rapidly than wages.

Nominal wage increases, remember, were set on the assumption that the 9 per cent rate of inflation would continue. In response to the profit decline, firms will reduce their employment levels. Consequently, the unemployment rate rises. The economy temporarily slides downwards from point A_3 to C_3 along short-run Phillips curve PC_3. According to the natural rate theorists, when the actual rate of inflation is lower than the expected rate of inflation, the unemployment rate will rise.

Firms and workers eventually adjust their expectations to the new 6 per cent rate of inflation, and thus the rate of increase in newly negotiated wage increases declines. Profits are restored, employment rises, and the unemployment rate returns to its natural rate of 6 per cent at point A_2. Because the expected rate of inflation is now 6 per cent, the short-run Phillips curve PC_3 shifts leftwards to PC_2.

If aggregate demand falls further, the scenario continues. Inflation declines from 6 per cent to, say, 3 per cent, moving the economy from A_2 to C_2 along PC_2. The reason once again is that the lower than expected rate of inflation (and thus lower prices) has squeezed profits and reduced employment. But in the long run, firms can be expected to respond to lower profits by reducing their nominal wage increases. Profits are therefore restored and unemployment returns to its natural rate at A_1 as the short-run Phillips curve moves from PC_2 to PC_1. Once again, the long-run Phillips curve is vertical at the natural rate of unemployment.

To repeat—according to the adaptive expectations theory, any particular rate of inflation is compatible in the long run with the natural rate of unemployment.

RATIONAL EXPECTATIONS REVISITED

The adaptive expectations theory assumes that increases in money wages lag behind increases in the price level. This lag gives rise to temporary increases in profits, which in turn temporarily stimulate employment.

But you will recall the introduction in Chapter 13 to **rational expectations theory**, which suggests that businesses, consumers and workers understand how the economy functions and effectively use available information to protect or further their own self-interests. In particular, people understand how government policies affect the economy and anticipate these impacts in their own decision-making.

In this context, let us suppose that, when government invokes expansionary policies, workers anticipate inflation and a subsequent decline in real wages. Workers incorporate this expected inflation into their nominal wage demands. If we make the assumption that workers correctly and fully anticipate the amount of price inflation and adjust their current nominal wage demands accordingly so as to maintain their real wages, then even the temporary increases in profits, output and employment will not occur. In this case, instead of the temporary increase in employment shown by the movement from A_1 to B_1 in Figure 14.5, the movement will be directly from A_1 to A_2. Fully anticipated inflation by labour means there will be no short-run decline in unemployment. Price inflation that is fully anticipated in the money wage demands of workers generates a vertical line through A_1, A_2, A_3 and A_4 in Figure 14.5.

The policy implication is this: Keynesian measures to achieve a (misspecified) full-employment rate of unemployment will generate an accelerating rate of inflation, not a lower rate of unemployment. Note, incidentally, that the adaptive expectations and rational expectations theories are consistent with the conservative philosophy that government's attempts to do good deeds typically fail, and at considerable cost to society. In this instance the 'cost' is in the form of accelerating inflation. Indeed, an activist fiscal policy will be ineffective in achieving its goals.

CHANGING INTERPRETATIONS OF THE PHILLIPS CURVE

Interpretations of the Phillips curve have changed dramatically over the past three decades. The original idea of a stable trade-off between unemployment and inflation gave way to the adaptive expectations view that, while a short-run trade-off existed, no such trade-off was available in the long run. The more controversial rational expectations theory stresses that macroeconomic policy is ineffective because it is anticipated by workers. Hence, the conclusion is that there does not even exist a short-run trade-off between unemployment and inflation. Taken together, the two variations of the natural rate hypothesis conclude that demand-management policies cannot influence real output and employment, but only the price level. This conclusion is clearly contrary to the predictions of the original Phillips curve in Figure 14.2(b).

Which view is correct? Does an inverse relationship exist between the unemployment rate and the inflation rate, as the original Phillips curve suggested? Or is there no trade-off, as the adaptive expectations and rational expectations theories contend?

Perhaps the safest statement that can be made is that most economists accept the notion of a short-run trade-off—although the menu of choices may be less favourable than those indicated in Figure 14.2(b)—while recognising that in the long run such a trade-off is much less likely. Economists also recognise that aggregate supply shocks are likely to bring about stagflation.

It is relevant to note that the experiences of the early 1980s and early 1990s demonstrated that a recession is probably required to wring inflation out of the economy—a fact that is entirely consistent with the central notion of the original Phillips curve. A further unfortunate observation from the early 1980s and 1990s is that if a 'natural' rate of unemployment exists in Australia, then this natural, or full-employment, rate of unemployment has increased substantially over time. A quick glance at Figure 14.3 will confirm this suspicion. The natural rate would appear to have increased from around 2 per cent in the 1950s and 1960s to around 6 per cent in the mid-1970s and early 1980s, and to around 7 to 8 per cent currently!

Concept highlights

- An acceptance of the natural rate of unemployment suggests that we face two Phillips curves—an unstable short-run Phillips curve and a stable long-run Phillips curve at the natural rate of unemployment. There are two explanations of the natural rate hypothesis—the adaptive expectations approach and the rational expectations approach.
- The adaptive expectations variant of the natural rate hypothesis argues that, in the long run, the traditional Phillips curve trade-off does not exist. Expansionary demand-management policies will shift the short-run Phillips curve upward, resulting in increasing inflation with no permanent decline in the unemployment rate.
- The rational expectations variant of the natural rate hypothesis contends that the inflationary effects of expansionary policy will be anticipated, and reflected in nominal wage demands. As a result, there will be no short-run increase in employment, and thus no short-run Phillips curve.
- Although it appears that the short-run trade-off between inflation and unemployment is unstable, questions exist about the level of the natural rate and whether this has and can be altered over time.

AGGREGATE SUPPLY REVISITED

The distinction between short-run Phillips curves and the long-run vertical Phillips curve is related closely to our understanding of aggregate supply.

You will recall from Figures 14.1 and 14.2(a) that we derived the Phillips curve by shifting aggregate demand rightwards along a supposedly stable aggregate supply curve. Firms responded to the increasing price level by producing more output and increasing their employment levels. Thus, the unemployment rate fell as the price level increased.

The natural rate theory correctly suggests, however, that the short-run aggregate supply curve in Figure 14.1 is stable only so long as nominal wages do not increase in response to the rise in the price level. Once workers fully recognise that the rise in the price level has occurred, they demand and receive higher nominal wages to restore their real wages. An increase in nominal wages, *other things being equal*, shifts the aggregate supply curve leftwards. A change in nominal wages is one of the determinants of aggregate supply (Chapter 8). It is these shifts in nominal wages that provide us with a link between the Phillips curve analysis and our model of short-run and long-run aggregate supply and price behaviour.

1. Workers will not immediately become informed of upward or downward shifts in the price level, leading to a lag between changes in the price level and changes in nominal wage demands.
2. The presence of contracts and awards for workers that cover the level of wages or salaries to be paid over a specified period impose additional lags on the rate at which nominal wage demands may alter in response to changes in the price level.

The result of both the lack of information about price level changes and the presence of awards and contracts means that changes in the price level will not immediately lead to changes in nominal wages. Indeed, in the short run, if aggregate demand increases sufficiently, the nation's unemployment rate may fall below its natural rate.

KEYNESIAN VERSUS NEW CLASSICAL POLICY: IMPLICATIONS

The conception of aggregate supply presented in Figure 14.6 implies that wage and price flexibility will drive the economy towards full employment. For this reason, this model is closely identified with the natural rate hypothesis, or **new classical economics**. As we shall see, this contrasts sharply with the Keynesian view.

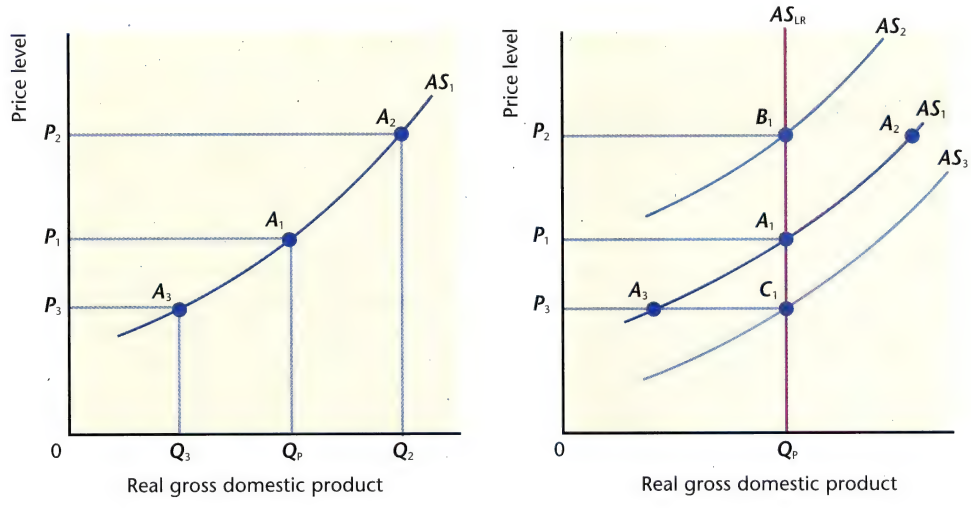


FIGURE 14.6
Short-run and long-run aggregate supply

(a) In the short run, input prices such as nominal wages are assumed to be fixed, based on price level P_1. An increase in the price level will improve profits and entice firms to expand real output. Alternatively, a decrease in the price level will reduce profits and real output. The short-run *AS* curve (AS_1) therefore slopes upwards, consistent with the short-run Phillips curve. (b) In the long run, a price level rise will increase nominal wages and thus shift the short-run *AS* curve leftwards from AS_1 to AS_2. Conversely, a decrease in the price level will reduce nominal wages and shift the short-run *AS* curve rightwards from AS_1 to AS_3. The long-run *AS* curve (AS_{LR}) may therefore be thought of as being vertical, consistent with the long-run Phillips curve and the natural rate of unemployment.

NEW CLASSICAL POLICY VIEW

According to new classical thinking, fully anticipated price level changes do not change the level of real output, because nominal wages immediately change in the same direction and by the same percentage as the price level. Only the **long-run aggregate supply curve** is relevant when price level changes are anticipated. For this reason, government stabilisation policies allegedly fail to affect real output. This is simply the rational expectations view.

Price level surprises: unanticipated changes in the price level, which allow deviations from long-run supply to occur.

To be sure, unanticipated changes in the price level—so called **price level surprises**—do produce short-term fluctuations in real output. These temporary changes in real output, say the new classical economists, result from unanticipated changes in aggregate demand and supply. In other words, temporary changes in real output arise from aggregate demand or supply shocks.

To illustrate—suppose an unanticipated increase in foreign demand for Australian goods and services increases our price level. As a consequence, the economy will move along its short-run aggregate supply curve to a higher level

of real output. But in the long run, nominal wages and other input prices will increase in response to the higher price level and the economy will return to its potential real-output level.

The new classical generalisation is this: although price level surprises may create short-run macroeconomic instability, the economy is stable in the long run at the full-employment level of output.

Furthermore, new classical economists view the long run as occurring either instantaneously or within a relatively short period. Therefore they favour a hands-off policy by government to permit the economy to adjust itself to the full-employment level of output.

THE KEYNESIAN ALTERNATIVE

Modern Keynesians dismiss the assumption of highly competitive markets and the instantaneous adjustment of prices and wages that forms the basis for the rational expectations theory of new classical economics. But they do not quarrel with the distinction between short-run and long-run aggregate supply. Instead, they argue that experience has shown that the adjustment of nominal wages critical to the vertical long-run aggregate curve is painfully slow.

Because nominal wages tend to be inflexible downwards, years may go by before the economy moves from a point such as A_3 to C_1 in Figure 14.6(b). Therefore, the assumption of a fixed aggregate supply curve underlying the analysis in previous chapters is not only useful for simplifying complex theory, but also realistic for all but very long periods. Thus, modern Keynesians continue to call for the active use of stabilisation policies to reduce the high costs of severe unemployment or inflation.

Some Keynesians also point out that the position of the natural rate of unemployment seems to follow the current rate of unemployment—a hysteresis argument. If this is the case, they argue, surely the natural rate can be influenced by government's stabilisation policy; if large increases in the level of unemployment are prevented, the natural rate may be maintained at a lower level. However, there may be inherent dangers in the use of stabilisation policies, as we shall discuss in our examination of demand-pull and cost-push inflation.



Concept highlights

- The Phillips curve analysis provides us with a link between labour market and wages behaviour and short-run and long-run aggregate supply. The short-run aggregate supply curve will shift upwards in response to the upward movement of the short-run Phillips curve. However, the nature in which this relationship is viewed is determined by the school of thought to which the economist belongs.
- The new classical viewpoint is that fully anticipated price level changes do not change the level of real output, due to the immediate adjustment of nominal wages. However, unanticipated changes in the price level, or price level surprises, do produce short-term fluctuations in real output. Only the long-run aggregate supply curve is relevant when price level changes are anticipated. Rational expectations suggest that government stabilisation policies will fail to affect real output.
- Modern Keynesians dismiss the assumptions of rational expectations theory that markets are highly competitive and that price and wage adjustments are instantaneous. They argue that experience has shown that the adjustment of nominal wages critical to the vertical long-run aggregate curve is painfully slow. Additonally, the natural rate may not itself be fixed. Each of these features suggests a role for government policy intervention to remedy unemployment.

Asian FOCUS — MONETARY EXPANSION AND INFLATION

Inflation, according to the famous economist Milton Friedman, is a monetary phenomenon. Thus we might expect to see a direct relationship between the rate of growth in the money supply and the rate of inflation. We provide data for our region for 1990–97 to allow an assessment of this idea.

	Annual average rate of growth 1990–97	
Country	**Money supply**	**CPI**
Australia	12.2	2.3
Japan	7.6	1.0
New Zealand	3.0	2.0
China, mainland	24.0	12.6
India	16.0	9.6
Indonesia	17.3	8.6
Korea	12.6	5.6
Malaysia	19.2	4.0
Philippines	16.1	8.9
Singapore	9.3	2.3
Thailand	12.0	4.9

SOURCE: Money supply data derived from International Monetary Fund, International Financial Statistics, *December 1999; CPI data from World Bank,* 1999 World Development Indicators.

Questions

1. Does there appear to be a relationship between the rate of growth in the supply of money and the rate of increase in the CPI? Graph the tabulated data and examine the graph for evidence of a relationship.
2. What is your assessment of the validity of the monetarist view that inflation is driven by monetary factors?
3. What variables might affect the accuracy of the relationship between money and prices evident in your graph and your ability to test this relationship? Explain.

DEMAND-PULL AND COST-PUSH INFLATION

We are now able to apply our tools of short-run and long-run aggregate supply to better understand demand-pull and cost-push inflation.

DEMAND-PULL INFLATION

Demand-pull inflation occurs when an increase in aggregate demand pulls up the price level. We depicted this type of inflation in Chapter 8 by shifting an aggregate demand curve rightwards along a stable aggregate supply curve.

In our more detailed version of aggregate supply, however, an increase in the price level will eventually result in an increase in nominal wages, and thus a leftward shift of the short-run aggregate supply curve itself. This is shown in Figure 14.7(a). In this figure, we begin with the economy in equilibrium at point e_1 where AD_1 and AS_1 intersect. AS_1 is a short-run curve based on the nominal wages associated with price level P_1. The resulting real domestic output and price level are P_1 and Q_P respectively.

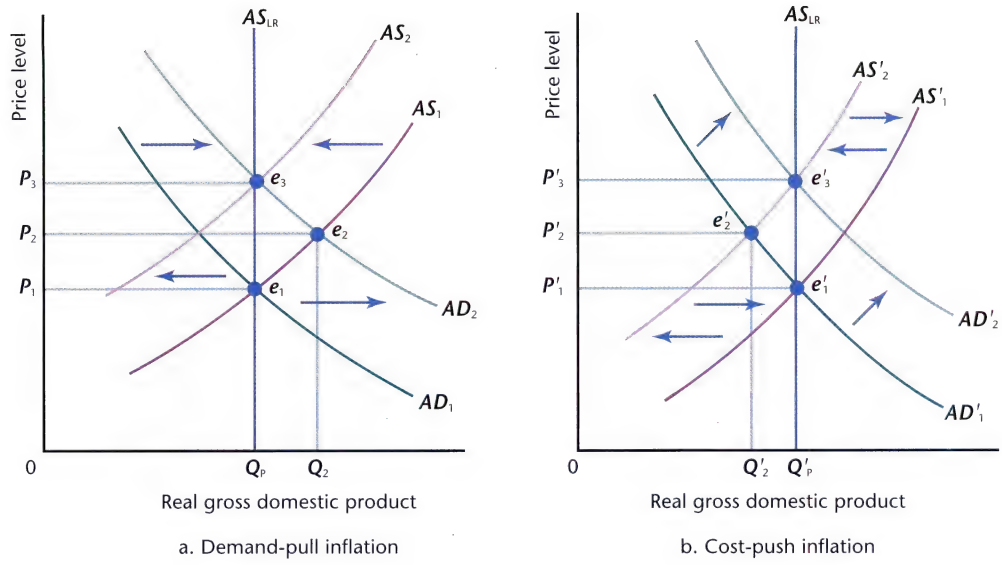


FIGURE 14.7
Demand-pull and cost-push inflation

In (a), an increase in *AD* will drive up the price level and increase real output in the short run. But, in the long run, nominal wages will rise and *AS* will shift leftwards. Real output will return to its previous level and the price level will rise still further. In (b), cost-push inflation occurs when *AS* shifts leftwards. If government counters the decline in real output by increasing *AD*, the price level will rise even further. On the other hand, if government allows a recession to occur, nominal wages will eventually fall and the *AS* curve will shift back rightwards to its original position. You will observe that the long-run *AS* curves are vertical in both (a) and (b).

If aggregate demand now increases—for example, because of an increase in government spending, a reduction in taxes, a favourable change in business or consumer expectations, or an easing of monetary policy (see Table 8.1)—AD_1 will shift rightwards to, say, AD_2. At the new e_2 equilibrium, more real output is produced at Q_2 (and unemployment is reduced), but the price level has risen to P_2.

So far nothing new has been said. But now we must ask, what will happen to the short-run aggregate supply curve once workers realise that their real wages have fallen and once their existing wage contracts have expired? Our answer is that nominal wages will rise when wage contracts are re-negotiated, and as they do, the short-run aggregate supply curve will shift leftwards, eventually from AS_1 to AS_2. Consequently, the price level will further increase to P_3 at point e_3 and the equilibrium level of output will return to its potential level, Q_P.

A generalisation: in the short run, demand-pull inflation will drive up the price level and increase real output; in the long run, only the price level will rise. In the long run, the increase in aggregate demand has only moved the economy along its vertical aggregate supply curve AS_{LR}.

COST-PUSH INFLATION

Cost-push inflation arises from factors that increase the cost of production at each price level—that is, shift the short-run aggregate supply curve leftwards—and therefore increase the price level. But our previous analysis has, in effect, considered only short-run aggregate supply. We will now examine the cost-push theory in its long-run context.

ANALYSIS

Cost-push inflation is portrayed in Figure 14.7(b). Here the initial equilibrium at e'_1 moves to e'_2 as the aggregate supply curve shifts leftwards from AS'_1 to AS'_2. Why might such a shift occur? As discussed in Chapter 8, the short-run aggregate supply curve is based on production costs; businesses are profit seekers and they must obtain prices that permit them to cover their unit production costs if they are to continue to supply their products. Hence, anything that increases production costs—for example, higher business taxes or interest rates, a decline in the efficiency (productivity) of workers, or an increase in money wages—will mean that higher costs and prices are now associated with each level of real domestic output.

The leftward shift of aggregate supply in Figure 14.7(b) establishes a new equilibrium at e'_2 that entails a higher price level and a smaller real output level, Q'_2, (and more unemployment). Note that the shift of the aggregate supply curve from AS'_1 to AS'_2 is not a response to a price level increase as it was in our previous discussions of short-run versus long-run aggregate supply.

POLICY DILEMMA

Cost-push inflation creates a major dilemma for policy makers. If aggregate demand in Figure 14.7(b) remains at AD'_1, real output will have declined from Q'_P to Q'_2; unemployment will be above its natural rate. Government can counter this recession and its attendant unemployment by using stabilisation policies to increase aggregate demand to AD'_2. But there is a potential trap for policy makers. An increase in aggregate demand to AD'_2 will further aggravate inflation by increasing the price level from P'_2 to P'_3 at point e'_3

And the P'_2 to P'_3 increase in the price level is not likely to be a one-off boost, because wage earners will respond to their decline in real wages by seeking and receiving increases in nominal wages. If they are successful, the higher nominal wages will cause a further increase in production costs. This will shift the short-run aggregate supply curve to a position to the left of AS'_2. This (unshown) leftward shift of the short-run aggregate supply curve is in response to the higher price level P_3 that was caused by the rightward shift of aggregate demand to AD'_2. You may wish to draw in this leftward shift of the AS curve to convince yourself that it will renew the stagflation problem. In brief, government will have to increase aggregate demand once again to restore the Q'_P level of output. But if government does this, the process may simply repeat itself.

The point is that leftward shifts in the short-run aggregate supply curve may occur when government applies expansionary demand-management policy to alleviate output reductions resulting from cost-push inflation. These shifts in short-run aggregate supply frustrate the attainment of full employment and increase the price level.

Alternatively, suppose that government recognises this policy trap and decides not to increase aggregate demand from AD'_1 to AD'_2. Instead, government implicitly decides to allow a cost-push-induced recession to run its course. Widespread layoffs, plant shutdowns and business failures will eventually occur. At some point there will be sufficient slack in the labour market to reduce nominal wages and thus undo the initial leftward shift of short-run aggregate supply. In other words, a severe recession will in time shift the short-run aggregate supply from AS'_2 back to AS'_1. The price level will therefore return to P_1 at e'_1 and the potential level of output will be restored along the long-run aggregate supply curve AS_{LR}.

Two generalisations emerge from our analysis:

1. If government attempts to maintain full employment under conditions of cost-push inflation, an inflationary spiral is likely to result.

2 If government takes a hands-off approach to cost-push inflation, a recession will probably occur. Although the recession can be expected eventually to undo the initial rise in production costs, the economy in the meanwhile will experience high unemployment and a loss of real output.

OTHER OPTIONS

Given the experience of the past two decades, it is no surprise that the market economies have looked beyond demand-management policies in attempting to deal with stagflation.

In terms of Figure 14.7(b), these new policies were designed to prevent the aggregate supply curve from shifting leftwards, as from AS'_1 to AS'_2. Alternatively, if the economy already found itself with stagflation at the intersection of AD'_1 and AS'_2, the goal would be to shift the aggregate supply curve rightwards towards AS'_1. Similarly, in terms of the Phillips curve, whether perceived as a down-sloping or a vertical line, the policy goal is to shift the curve leftwards to provide a better menu of inflation rate – unemployment rate choices for society. In particular, economists who interpreted the data points for the early 1970s and 1980s in Figure 14.3 as reflecting rightward shifts of the Phillips curve sought means of shifting the curve back to the more desirable position that seemed relevant for the 1960s.

Generally speaking, the following categories of policies have been proposed:

1 market policies

2 wage–price, or incomes, policies.

These will be the topics of Chapter 15.

Concept highlights

- In the short run, demand-pull inflation increases the price level and real output. Once nominal wages have increased, however, the temporary increase in real output dissipates.
- In the short-run, cost-push inflation increases the price level and reduces real output. Unless government increases aggregate demand, nominal wages will eventually decline under conditions of recession, and the short-run aggregate supply cure will shift back to its original position. Prices and real output will eventually return to their original levels.

Business IMPLICATION

WHAT OF THE SIDE EFFECTS OF INFLATION TARGETING?

Inflation targeting has become increasing popular as an economic strategy over the 1990s and 2000s. Many countries, such as Australia, New Zealand and the UK target inflation with their monetary policy. However, the use of monetary policy to target inflation removes the ability to use monetary policy to directly target the level of the exchange rate. This has been a particular problem for the UK, where the use of monetary policy and the associated high interest rates led to a significant strengthening of the pound over the late 1990s and into the early 2000s. The implication—British products have become more expensive in many markets causing a problem for Britain's manufacturing sector. A fall in competitiveness and sales has hurt the revenues of many British companies. In the longer term, this has clear implications for the economic structure of the country, providing a good cautionary example to those central bankers and governments that see the control of inflation as a be-all and end-all measure.

Global SNAPSHOT WAGES AND PRICES

The relationship between the rate of growth in wages and that of the price level is not an exact one, as is borne out by a brief international comparison.

Country	Average annual rate 1994–95 to 1998–99		
	Wages growth	Change in CPI	Unemployment rate
United States	3.9	2.4	5.1
Japan	0.8	0.4	3.6
Germany	1.8[a]	1.3	10.5
South Korea	3.2	4.3	3.6
Taiwan	2.5	1.9	2.4
Hong Kong	1.7[a]	4.2	3.4
New Zealand	2.7	1.8	6.8
Singapore	1.9	1.0	2.4
Australia	*2.1*	*1.9*	*8.4*

a Refers to 1997–98 and 1998–99.

SOURCE: Unemployment rate and CPI data from Reserve Bank of Australia, Bulletin, *March 2000; wages growth data from* Euromonitor, *March 1999.*

Questions

1. Graph the relationship between wages growth and inflation, and then between inflation and unemployment. Comment on any relationships that appear to be present in the data.
2. In plotting the relationship between inflation and unemployment, have you graphed a Phillips curve? Why or why not? Explain.
3. Why is the relationship between inflation and wages growth not more exact? Discuss some of the reasons why the rate of growth in wages and the inflation rate of an economy may differ.

SUMMARY

1. Using the aggregate demand – aggregate supply model to compare the impacts of small and large increases in aggregate demand upon the price level and real output yields the generalisation that high rates of inflation should be associated with low rates of unemployment, and vice versa. This inverse relationship is known as the Phillips curve, and empirical data prior to the 1970s were generally consistent with this inverse relationship. Labour market imbalances and monopoly power are used to explain the apparent Phillips curve trade-off.
2. The Phillips curve relationship is complicated by downward price–wage inflexibility when aggregate demand declines (the 'ratchet' effect); and shifts in short-run aggregate supply not related to general increases in all wages.

In the 1970s the Phillips curve seems to have shifted rightwards, a shift consistent with stagflation—the simultaneous existence of increases in the price level and falls in output. A series of supply-side shocks was involved, including the OPEC cartel's increase in oil prices. More subtle factors—inflationary expectations and a decline in the rate of productivity growth in Australia—also contributed to stagflationary tendencies.

3 An acceptance of the natural rate of unemployment suggests that we face two Phillips curves—an unstable short-run Phillips curve, related to the short-run aggregate supply curve, and a stable long-run Phillips curve at the natural rate of unemployment. There are two explanations of the natural rate hypothesis—the adaptive expectations approach and rational expectations approach.

4 The adaptive expectations variant of the natural rate hypothesis argues that, in the long run, the traditional Phillips curve trade-off does not exist. Expansionary demand-management policies will shift the short-run Phillips curve upward as wage increases accommodate inflation with some error and a lag. The result will be an increasing inflation rate with no permanent decline in the unemployment rate.

5 The rational expectations variant of the natural rate hypothesis contends that the inflationary effects of expansionary policy will be anticipated, and reflected in nominal wage demands. As a result, there will be no short-run increase in employment, and thus no short-run Phillips curve.

6 The Phillips curve analysis provides us with a link between labour market and wages behaviour and the short-run and long-run aggregate supply curves. The short-run aggregate supply curve will shift upwards in response to the upward movement of the short-run Phillips curve, as the general level of wages alters in the economy. However, the nature in which this relationship is viewed and the speed with which these adjustments are assumed to occur are determined by the school of thought to which the economist belongs.

7 The new classical viewpoint is that fully anticipated price level changes do not change the level of real output, due to the immediate adjustment of nominal wages. Only the long-run aggregate supply curve is relevant when price level changes are anticipated. Rational expectations suggest that government stabilisation policies will fail to affect real output in the long term. However, unanticipated changes in the price level, or price level surprises, do produce short-term fluctuations in real output and are a source of instability in the economy.

8 Modern Keynesians dismiss the assumptions of highly competitive markets and the instantaneous adjustment of prices and wages associated with the classical school's version of rational expectations theory. They argue that experience has shown that the adjustment of nominal wages critical to the vertical long-run aggregate curve is painfully slow. Additonally, they argue, the natural rate may not itself be fixed at any level permanently. Each of these features suggests a role for government policy intervention to remedy unemployment, and the ability to influence the natural rate of unemployment.

9 In the short run—where nominal wages are fixed—an increase in the price level increases profits and real output. Conversely, a decrease in the price level reduces profits and real output. Thus, in the short run, demand-pull inflation may increase both the price level and real output. Once nominal wages have increased, however, the temporary increase in real output dissipates.

10 In the short-run, cost-push inflation increases the price level and reduces real output. Unless government increases aggregate demand, nominal wages will eventually decline under conditions of recession, and the short-run aggregate supply cure will shift back to its original position. Prices and real output will eventually return to their original levels, with employment returning to a rate consistent with the natural rate of unemployment.

KEY TERMS *and* CONCEPTS *to remember*



aggregate supply shocks	470	new classical economics	479
cost-push inflation	482	Phillips curve	466
demand-pull inflation	481	price level surprises	479
disinflation	476	rational expectations theory	476
inflationary expectations	472	short-run aggregate supply curve	465
long-run aggregate supply curve	479	stagflation	470
natural rate hypothesis	473	theory of adaptive expectations	474

QUESTIONS *and* STUDY SUGGESTIONS



Discussion & review

1 What is the Phillips curve? What does it purport to show? Why might we be interested in the relationship suggested by the Phillips curve? Explain.

2 What is the logic of the Phillips curve—that is, on what basis can we potentially explain its existence?

3 What is stagflation? What is its relevance to the Phillips curve?

4 What were the sources of the observed shifts in the Phillips curve during the 1970s and 1980s? Describe their impact on inflation and on views about the stability and existence of the Phillips curve.

5 'The Phillips curve concept is consistent with increases, but not decreases, in aggregate demand.' Explain the source of this apparent paradox.

6 What is the natural rate hypothesis? How does it relate to the Phillips curve? Explain.

7 Revise your knowledge of rational expectations theory (see Chapter 13) and explain its relevance to an analysis of the Phillips curve. Contrast this view with the adaptive expectations approach. How many Phillips curves do these theories suggest we face? Is there a trade-off between inflation and unemployment in the long run? Explain.

8 What is the relationship between the Phillips curves and the aggregate supply curves of the aggregate demand – aggregate supply model of Chapter 8? Explain.

9 How do the new classical and Keynesian views differ with respect to their conclusions about the effectiveness of and need for aggregate demand policies? Explain.

10 Distinguish clearly between demand-pull and cost-push inflation. What policy dilemma faces the government in the case of cost-push inflation? Explain.

Problems & exercises

1 Employ the aggregate demand – aggregate supply model to derive the short-run Phillips curve using graphs. Are these models consistent?

2 Use an appropriate diagram to explain the adaptive expectations rationale for concluding that the Phillips curve is a vertical line.

3 Explain how private expectations might frustrate public policy. Would unemployment be a problem if the views of the new classical school held? Explain, using graphs and a discussion of the speed of the adjustment process to support your argument.

4 Assume that the information in the table below is relevant for an industrially advanced economy in the 1998–2000 period. Describe in detail the macroeconomic situation faced by this society. Is cost-push inflation in evidence? What policy proposals would you recommend?

Year	Price level index	Rate of increase in labour productivity (%)	Index of industrial production	Unemployment rate (%)	Average hourly wage rate ($)
1998	167	4.0	212	4.5	16.00
1999	174	3.0	208	5.2	18.00
2000	181	2.5	205	5.8	20.20

5 Use the aggregate demand – aggregate supply model to compare the causes and policy implications of (a) demand-pull and (b) cost-push inflation in both the short run and the long run. In what way does the presence of cost-push inflation make demand-management policy ineffective?

Application & analysis

1 'There is no way to make full employment, price level stability, and free markets compatible.' Do you agree or disagree? Provide examples to support your viewpoint.

2 'Supply-side and demand-side problems are part of the same economic system. Capitalists will not produce unless they make a profit, which requires both that costs be low enough (the supply-side problem) and that sales be high enough (the demand-side problem). Often the two sides are in direct conflict—to keep costs down, capitalists want to pay low wages, but to keep sales up they want workers to have a lot of money to spend. This conflict cannot be solved by a new, clever policy shift; it is a basic contradiction of capitalism.' Analyse in detail. Are you in agreement? Explain the basis for your reasoning. Is the conflict really unsolvable?

3 What has been the rate of productivity growth in Australia over the last decade? Has this changed significantly? Visit the website of the Australian Bureau of Statistics at:
http://www.abs.gov.au/

Gather information on labour productivity and wages growth from the website (look under the national accounts and labour market sections of the review of major economic aggregates). Gather information on the CPI. Plot the Phillips curve for the 1990s and the pattern of wages growth against productivity improvements. Does the path of productivity help to explain Australia's low-inflation, high-growth performance in the late 1990s? Discuss your conclusions. What might be missing in measures of productivity? Explain.

A LAST WORD FOR LESS INFLATION, TRY LESS MONEY

Monetary policy is no longer based on control of the money supply; rather it reflects the manipulation of short-term interest rates in most countries. However, interpretations of excessive expansion in the money supply as the primary source of inflation are still popular, as this discussion of the US economy indicates.

When Walt Disney World hikes the admission price for 10-year-olds from $31 to $41, it's time to begin worrying about inflation. Nearly every measure of core inflation is rising, from import prices to the consumer price index. More and more companies are raising prices and making them stick. A National Association of Business Economics survey shows pay hikes are at an 11-year high. The employment cost index is up. While prices on some products are falling, cyclical pressures from fast US growth and a sharp recovery in Asia and Europe are pushing others up. The Federal Reserve is caught in a bind. Volatile stock markets that crash one day and soar the next may be signalling serious trouble ahead and require a light touch on monetary policy. But rising inflation demands serious tightening. Our advice to the Fed: keep the focus on inflation.

The Fed itself has contributed to the wild ride in Nasdaq stocks by flooding the system with liquidity to stave off potential financial crises. Much of that liquidity has become the froth of stock speculation. The first crisis was the Asian meltdown of 1997. In the face of a threat to the global financial system, the Fed cut rates three times in the final three months of that year. (Central banks around the world cut rates a total of 68 times.) This was clearly the right move at the time.

But then the Fed decided to broker a bailout of the Long-Term Capital Management hedge fund, which collapsed as a result of the crisis. By the fall of 1998, when Russia defaulted, some investors were thinking the Fed would save them from their own poor decisions in the future. The Fed cut rates three more times. The added surge in the money supply supported a strong rally in stock prices.

Then came the Y2K scare. The Fed printed an extra $50 billion to allay fears of a bank run, leading the growth rate of the money supply to jump from 5 per cent to 15 per cent by the end of 1999. True, the Fed was not alone in overestimating the seriousness of the Y2K problem, but its actions helped send the Nasdaq to the stratosphere. The extra liquidity also lit a fire under the economy, which grew at 7.3 per cent in the fourth quarter of last year.

The Fed has since been mopping up excess liquidity. It has done a good job so far, but it has a ways to go. Unless the markets begin to spiral down in a free fall, the Fed should tough it out and steadily reduce the rate of money-supply growth. This will contain speculation, cool the economy, and fight off the threat of cyclical inflation.

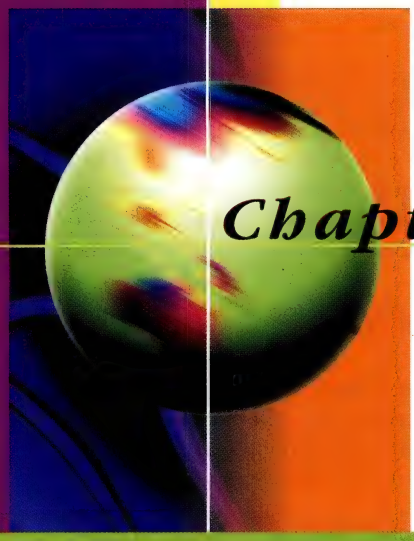
SOURCE: Business Week, *1 May 2000.*

Questions

1 What does the writer of the article see as the primary source of inflation in the US economy? Does the background information that the author supplies provide adequate support for the argument? Discuss this issue, referring to some of the pitfalls in economic thinking introduced in Chapter 1 of this text.

2 Is there a difference between printing extra money and easing monetary policy? Explain, commenting on the significance of this for discussing the sources of the current inflationary pressures observed in the US economy.

3 Based on your analysis of the material in this chapter, what other explanations might you find for the emergence of inflationary pressures in the US economy, consistent with the information provided in the article? Discuss.



Chapter 15 AGGREGATE SUPPLY AND THE LABOUR MARKET

INTRODUCTION

Two generalisations emerged from our analysis of Chapter 14 on inflation and its causes. The first was that if the government attempts to maintain full employment under conditions of cost-push inflation, an inflationary spiral is likely to result. The second is that if government takes a hands-off approach to cost-push inflation, a recession will probably occur. Although a recession can be expected eventually to undo the initial rise in production costs that caused it, the economy in the meanwhile will experience high unemployment and a loss of real output.

These features of the macroeconomy were, in fact, reflected in the economic experiences of the 1970s and early 1980s. Thus, it is no surprise that in the mid-1980s and beyond the market economies have looked beyond demand-management policies in attempting to deal with stagflation.

In this chapter we will examine the operation and role of policies designed to operate on the aggregate supply curve to fight stagflation. These are market policies; and wage–price (incomes) policies. It is on the second of these that we will largely focus. The chapter then provides a brief review of Australia's history of wage negotiation and industrial relations arrangement. We finish with a recap on alternative macroeconomic perspectives.

LEARNING OBJECTIVES

Briefly review the role of market policies in the fight against inflation.

Examine policy proposals—incomes and supply-side policies—designed specifically to deal with stagflation.

Survey the development of Australia's unique industrial relations system.

Discuss changes in Australia's industrial relations system in the 1990s.

MARKET POLICIES

Two kinds of anti-inflation **market policies** can be distinguished. The first—employment and training policy—is intended to reduce or eliminate imbalances and bottlenecks in labour markets. As we suggested in Chapter 14, these may form a major source of inflationary potential in the economy. The second is pro-competition policy. Pro-competition policy attempts to reduce the market power of unions and large corporations. You will recall that labour market imbalances and market power constitute the traditional logic underlying the Phillips curve.

EMPLOYMENT AND TRAINING POLICY

The goal of employment and training policy is to improve the efficiency of labour markets so that any given level of aggregate demand will be associated with a lower level of unemployment. In other words, the purpose of employment and training policy is to achieve a better matching of workers to jobs, so reducing labour market imbalances or bottlenecks. Several different kinds of programs will provide a better matching of workers to jobs. Three of these are vocational training, job information, and anti-discrimination programs.

VOCATIONAL TRAINING

Programs of vocationally oriented education and training will permit marginal and displaced workers to be more quickly re-employed. The National Employment and Training scheme (NEAT), introduced in 1974, was an Australian landmark in this area, providing training and support for on-the-job training to help overcome shortages of particular skills. Since then a variety of schemes have been used, including assistance to employers who take on apprentices retrenched by a former employer, support for special courses for particular skills in demand, and other general training assistance.

JOB INFORMATION

A second type of employment and training policy is concerned with improving the flow of job information between unemployed workers and potential employers and with enhancing the geographical mobility of workers. This could be achieved to some degree by modernising the operations of the government employment services and was one of the reasons for the introduction of Employment National by the Howard coalition government. Providing incentives such as assistance with relocation could help to encourage geographical mobility.

NON-DISCRIMINATION

Another facet of recommended employment and training policy is concerned with reducing or eliminating artificial obstacles to employment. Prejudice and discrimination may be an important obstacle in the matching of workers and jobs. To this end, the Commonwealth government and state governments have introduced equal opportunity legislation, while the Commonwealth requires all middle-sized and larger organisations to report annually on their affirmative action policies and achievements towards equality of opportunity in employment.

EFFECTIVENESS OF EMPLOYMENT AND TRAINING PROGRAMS

By their very nature, these employment and training policies are not easily evaluated. Their impact on the shape and position of the short-run aggregate supply curve is uncertain. Because they often involve disadvantaged individuals

who have little education and who have been discouraged by past job-market experiences, the expectation of sudden and spectacular success is perhaps unwarranted. Moreover, Australia has not mounted employment and training programs to the extent attempted in other countries. In Australia, short-term shortages of specific skills have often been alleviated quickly by immigration rather than through retraining schemes. In addition, there is considerable debate about the effectiveness with which policy makers can predict Australia's future employment and skill needs, towards which training of the unemployed will then be directed.

PRO-COMPETITION POLICY

A second avenue for improving the trade-off between the unemployment rate and the inflation rate is to reduce the monopoly or market power of unions and businesses. The contention here is that the monopoly power of unions must be reduced so that they will be less able to push up wage rates ahead of average productivity increases. Similarly, more competition in the product market will reduce the discretionary power of large companies to raise prices.

How can the economy be made more competitive? A basic recommendation is to apply our existing trade practices laws much more vigorously to big businesses and to remove existing legal restrictions upon entry to certain regulated industries. Similarly, the elimination of tariffs and other restrictions upon foreign imports will tend to increase the competitiveness of Australian markets. On the labour front, it is periodically argued that the anti-monopoly laws should be applied more frequently to unions than is currently the case.

Although these policies are designed to put an upward brake on movements in the short-run aggregate supply curve and to reduce the incidence of the 'ratchet' effect in prices, serious questions can be raised about such proposals. Political realities are such that governments are unlikely to undertake extremely vigorous anti-monopoly or anti-union crusades. Furthermore, Australia is relatively inexperienced, compared for example with the United States, in the development and application of restrictive practices legislation. Government powers of intervention were only expanded to a wide scale as late as 1974—through the *Trade Practices Act*.

There is, additionally, some doubt about the degree to which such legislation can significantly retard the growth of monopoly or increase competition. Indeed, some economists feel that large monopolistic corporations are necessary if the economy is to enjoy the economies of mass production and a high rate of technological progress. Hence, although an effective anti-monopoly policy might be helpful in containing cost-push inflation, it might also entail diminished productive efficiency now and in the future. Nor is it at all clear that similar policies can be applied to labour without virtually destroying unions, an objective frequently argued as being part of the current industrial relations system.



Concept highlights

- Market policies aim to change the shape and position of the short-run aggregate supply curve. They may also be intended to reduce the downward price stickiness associated with the 'ratchet' effect.
- Market policies consist of employment and training programs designed to reduce labour market imbalances, and pro-competition policies that aim to reduce the market power of unions and companies.

- An assessment of the success of employment and training programs in assisting in the control of stagflation is difficult. This reflects the low skills and high unemployment rates of the individuals on which these policies tend to focus and the extent of their implementation.
- Pro-competition polices are subject to much political interference by the parties affected. Additionally, many economists question the degree to which such policies prevent the development of big business and the abuse of market power.

WAGE–PRICE (INCOMES) POLICIES

Incomes policies: government intervention in the labour and product markets designed to constrain both nominal incomes and prices paid in order to influence real income outcomes.

A second general approach to the Phillips curve dilemma accepts the existence of monopoly power and labour market imbalances as more or less inevitable facts of economic life and seeks to alter the behaviour of labour and product-market monopolists so as to make their wage and price decisions more compatible with the twin goals of full employment and price-level stability. Although they differ primarily in degree, it is meaningful to distinguish between **wage–price guideposts** and **wage–price controls**. In essence, guideposts and controls differ in that the former rely upon the voluntary cooperation of labour and business, whereas the latter have the force of law.

Wage–price guideposts and wage–price controls are sometimes called **incomes policies**. The reason for this label is that our real income—the amount of goods and services we can obtain with our nominal income—obviously depends upon the size of that nominal income and the prices of the goods and services we buy. Guideposts and controls are designed to constrain both nominal incomes and prices paid, thereby affecting real incomes. We now introduce the basic ideas behind incomes policies.

WAGE–PRICE GUIDEPOSTS: VOLUNTARY RESTRAINTS

The guideposts are essentially a set of wage and price rules that are meant to be followed voluntarily by labour and management.

WAGE GUIDEPOST

The basic wage guidepost is that wage rates in all industries should rise in accordance with the rate of increase in labour productivity for the nation as a whole. Referring to the equation used in our earlier discussion of the productivity decline, we know that wage rate increases that are equal to the rate of productivity growth are non-inflationary; that is, unit labour costs are unchanged and there is no reason for producers to raise their prices.

Of course, the productivity increases of some industries will exceed, while those of others will fall short of, the overall or average increase in national productivity. Hence, for an industry whose productivity rises by less than national productivity, unit labour costs will rise. For example, if national productivity rose by 3 per cent while productivity rose by only 1 per cent in industry *X*, then, with money wage rates increasing by 3 per cent, that industry would experience an approximately 2 per cent *increase* in its unit labour costs. Conversely, if productivity rose by 5 per cent in industry *Y*, then the 3 per cent increase in money wages would be associated with a *decrease* in unit labour costs of about 2 per cent.

PRICE GUIDEPOST

The basic price guidepost is that prices should change to compensate for changes in unit labour costs. This means that in industries whose rate of productivity is equal to the national average, prices would be constant because unit labour costs would be unchanged. For industries where productivity rises by less than the national average, prices could be increased by enough to cover the resulting increase in unit labour costs. Industry *X*, cited earlier, could increase its prices by 2 per cent. For industries where productivity increases exceed the national average, prices would be expected to fall in accordance with the resulting decline in unit labour costs. Industry *Y* should lower its prices by 2 per cent. These price increases and decreases would cancel out and leave the overall price level unchanged.

The guidepost approach can be implemented through the use of moral suasion, supplemented by ad hoc measures, for example threats of trade practices investigation or the abolition of protective tariffs for potential offenders.

WAGE–PRICE CONTROLS: MANDATORY RESTRAINTS

Wage–price controls have typically been a wartime phenomenon in Western economies. Such controls were introduced in peacetime by the government of the United States in 1971, when wages, salaries and all prices (including rents) were frozen for 90 days. In Australia (in late 1973) the Whitlam Labor government sought government powers of control over prices and incomes. However, approval for a proposed constitutional amendment that would have allowed such powers was refused by the Australian people in a referendum in 1973.

THE WAGE–PRICE POLICY DEBATE

There has been heated and prolonged debate about the desirability and efficacy of incomes policies. The debate centres on three points.

WORKABILITY AND COMPLIANCE

Critics argue that the voluntary guideposts approach is doomed to failure because it asks business and labour leaders to abandon their primary functions and to forgo the goals of maximum profits and higher wages. A union leader will not gain favour with the rank and file by not insisting on attainable wage increases; nor does a company official become endeared to shareholders by bypassing potentially profitable price increases. For these reasons, little voluntary cooperation can be expected from labour and management.

Even if wage and price controls have the force of law and, therefore, labour and management can be forced to obey, problems with enforcement and compliance can be severe, particularly if wage and price controls are quite comprehensive and if they are maintained for an extended time. The basic problem is that, over time, strong economic incentives develop to evade controls. For example, it can be highly profitable to violate controls on products and resources that are particularly scarce. The reason is that, to be effective, the maximum legal price will be less than the free-market price; therefore, it will be profitable to violate the controls. Further, firms can effectively circumvent price controls by lowering the quality or size of their product.

Proponents of incomes policies point out that inflation is frequently fuelled by inflationary expectations. Workers demand unusually large nominal wage increases because they expect future inflation to diminish their real incomes. Employers acquiesce to these demands because they, too, anticipate an

inflationary environment in which higher costs can be easily passed on to consumers.

It is argued that a strong wage–price control system can quell inflationary expectations by convincing labour and management that the government does not intend to allow inflation to continue. Therefore, workers do not need anticipatory wage increases. And firms are put on notice that they may not be able to shift higher costs to consumers via price increases. Expectations of inflation can generate inflation; wage–price controls can undermine those expectations. Proponents of incomes policies also contend that available evidence suggests policies have been workable. In general, although wage–price policies may encounter problems of compliance and workability when applied over an extended period, proponents contend there is reason to believe that such policies can be helpful in controlling short-term episodes of premature inflation.

ALLOCATIVE EFFICIENCY

Opponents of incomes policies contend that effective guideposts or controls interfere with the allocative function of the price system. The crucial point is that product and resource prices must be allowed to fluctuate freely and fully in response to changing market conditions—that is, to changes in demand, changes in resource supplies and changes in technology—for allocative efficiency to be sustained through time (see Chapters 2 and 3). Effective price guideposts would prohibit the market system from making these adjustments. For example, if an increase in the demand for some product should occur, its price could not rise to signal society's wish for more output and, therefore, more resources in this area of production. In fact, controls strip the market mechanism of its rationing function—that is, its ability to equate quantity demanded and quantity supplied—and product shortages will result.

Defenders of incomes policies respond as follows: if effective guideposts or controls are imposed upon a competitive economy, then in time the resulting rigidities will undoubtedly impair allocative efficiency. But is it correct to assume that resource allocation will be efficient in the absence of a wage–price policy? After all, cost-push inflation rises because big labour and big businesses possess monopoly power and consequently have the capacity to distort that allocation of resources. In short, it is not at all clear that a wage–price policy would further distort resource allocation in an economy already characterised by monopoly and allocative inefficiency. In fact, if guideposts or controls are specifically applied to those industries characterised by monopoly, it can be plausibly argued that allocative efficiency may be improved.

THE FREEDOM ISSUE

Libertarians are quick to point out that guideposts and controls seriously conflict with freedom of action. Restraints upon wage and price decisions are obviously coercive, and therefore at odds with the capitalistic ideology's insistence upon free markets and prices. Guideposts and controls move society 'in an authoritarian direction' and, in effect, create a new and more crucial trade-off problem between the goal of full employment with price stability on the one hand, and freedom of choice on the other.

Proponents of incomes policies respond that free economic decision-making is not an unmitigated good. Certainly, free choices that promote socially desirable ends are to be protected. Hence, freedom of choice is virtuous within the context of a competitive price system because the 'invisible hand' is effectively at work to

translate free choices based upon self-interest into socially desirable outcomes (see Chapter 3). But the discretionary decisions of unions and business monopolists that are the target of wage–price policies are clearly not of this type. When the market system is characterised by monopoly, the 'invisible hand' fumbles the ball so that decisions made on the basis of self-interest are at odds with the social interest.

More specifically, free decisions by monopolists in the pursuit of private gain may come at the expense of price-level stability and allocative efficiency. Incomes policy proponents contend that social control of such antisocial decision-making makes sense both economically and philosophically.

A final point—the validity of the criticisms of wage–price policy depends upon the rigidity, comprehensiveness and duration of such a policy. A loose, informal, flexible policy applied to a few key sectors of the economy for a relatively short period should wreak little havoc on resource allocation and economic freedom. But an inflexible 'no exceptions' system applied comprehensively to the entire economy for an extended time would clearly raise serious problems. The dilemma, of course, is that an informal and flexible wage–price system may be inadequate to the task of effectively improving upon the unemployment rate – inflation rate options available to society.

Concept highlights

- Incomes policies take the form of wage–price guideposts or controls. Wage–price guideposts can be either voluntary or mandatory.
- The basic wage guidepost is that wage rates in all industries should rise in accordance with the rate of increase in labour productivity for the nation as a whole. The basic price guidepost is that prices should change to compensate for changes in unit labour costs.
- Economists have debated the desirability and effectiveness of incomes policies in terms of workability, impact upon resource allocation, and compatibility with freedom of choice.

THE HISTORY OF WAGE FIXATION IN AUSTRALIA

The economic implications of minimum wage setting as a form of intervention in the wage-determination process are well known and have been analysed in detail (see Chapter 15 of the companion book *Microeconomics*, 6th edition). The history of such intervention in Australia is a long one.

BACKGROUND

In the early 1900s, Australian farm-machinery manufacturers sought a protective tariff to lessen competition from foreign manufacturers. The government agreed (as embodied in the *Excise Tariff Act 1906*) but would release domestic manufacturers from paying half the tariff only if they paid workers a 'fair and reasonable wage'. The Commonwealth Conciliation and Arbitration Court, which had been set up for the purposes of improving industrial peace, was given the rather difficult and sensitive task of determining what a 'fair and reasonable' wage was, in monetary terms.

In the **Harvester Judgement** (1907) the Court determined that:

1. An average worker was an unskilled man with a wife and three children.
2. A reasonable wage (42 shillings) was one that enabled the family to 'live reasonably' (known later as the **needs criterion**).
3. Skilled workers should receive a margin above the 'basic wage'.

This determination was to be the forerunner of the principles issued in national wage cases until the late 1980s. Although the judgement was to have long-lasting implications, at the time several aspects of the decision remained unresolved: What exactly did 'live reasonably' mean? Should workers' standard of living increase over time and, if so, at what rate? Should the capacity of employers to pay award wages, or indeed the state of the economy as a whole, be taken into consideration? Why should a worker be defined as a married *man* with three children and a non-working wife? Inevitably, debates on these issues ensued—and, as might be expected, unions, employers and eventually the government were all to become involved in attempting to influence the Court's decisions.

COST-OF-LIVING ADJUSTMENTS

Although the basic wage was a Commonwealth award, various state courts and boards soon followed the lead set by the Commonwealth decision. Within a few years the **basic wage** had become an integral part of the Australian wage structure.

By 1913, the trade unions were seeking increases in the basic wage to cope with inflation, which was undermining the real value of the award. As a result, the Court decided to preserve real values by applying annual **cost-of-living adjustments** to awards according to movements in a price index that had been devised in 1912. Although the basic wage was to be adjusted, *margins for skill* were not. The margin for skill, or secondary wage, remained a fixed amount in money terms, to be changed only by periodic review. In 1922, a further decision was made—to apply quarterly, rather than annual, adjustments to the basic wage on the basis of price movements. This scheme was in effect preserving the real value of the basic wage, but no increases in real value were being achieved.

CAPACITY TO PAY

In the 1920s, employer groups protested regularly that the growth in wage bills that resulted from quarterly adjustments was becoming prohibitive and beyond their capacity to pay. As the 1930s depression gripped the economy, the basic wage was automatically reduced (as prices fell), but in real terms the basic wage remained constant. The Court was sympathetic to the capacity of the economy (rather than individual employers) to pay, and in 1931 ordered a reduction of 10 per cent in the real value of the basic wage. Despite the angry reaction of unions, the Court had effectively added a **capacity to pay** criterion or principle to its 'needs criterion' in determining the basic wage case.

In 1953, the Court abandoned quarterly cost-of-living adjustments. This rather drastic action was meant as a partial check on inflation and was made in response to employers' claims that rises in the price index bore no relationship to the capacity of employers to pay increased wages, because this capacity was heavily dependent upon the terms of trade. From 1953, regular applications from trade unions to have cost-of-living adjustments restored were refused.

By 1961, however, it appeared that workers' real wages were becoming seriously eroded. The Commonwealth Conciliation and Arbitration Commission (which had replaced the Court) announced that price changes would again be taken into account, once a year, unless any argument opposing cost-of-living adjustment was considered sufficiently persuasive. In addition, it was decided that national productivity increases would be granted every few years.

TOTAL WAGE AND METAL TRADES CASES

In 1966, following many employers' submissions, the Commission announced that, in place of separate cases being held on the basic wage and on margins, there would in future be single decisions made on a total wage for each category of labour. Employers had expressed the view that separate cases gave unions the opportunity of securing two wage increases—the total wage case would mean a single decision for each worker. The Commission's decision was consistent with the concept of **comparative wage justice** in that relativities between new total-wage awards in key industries were also created. The Commission also announced that it would determine a **minimum wage**, which would be the lowest wage any worker covered by its awards could be paid. Continued concern for the welfare of the poorest workers led the Commission, in the following years, to increase minimum wages faster than total wages. The union movement was, at this time, still urging for automatic quarterly cost-of-living adjustments to all awards, but without success.

A judgement made by the Commission in 1967 was to have a lasting effect on the arbitration system. The Commission had completed a work-value review on all classifications in the metal industries awards. The purpose was to investigate whether any revisions of awards should be made on the basis of changes in the nature of work pursued. In its decision the Commission awarded a large increase, based on this work-value principle, to fully skilled tradespeople, thus increasing their position relative to other workers.

The Commission stated, however, that the awarded increases should be absorbed in over-award payments that already existed. This suggestion proved highly contentious. Some employers simply paid the work-value increases, while others attempted to absorb the increase—that is, not pay any new increase because over-award payments already existed. As a result, increasing industrial unrest led to many strikes. The unions won most disputes and the Commission found that, in reality, absorption was unlikely to occur, particularly in periods of high employment. Meanwhile, the trade union movement had learnt that direct action and negotiation outside of the arbitration process could be successful. Many commentators identify some decline in the Commission's influence from this point.

INDEXATION AND THE ECONOMY

In 1972, a new element in national wage decision-making came about when an amendment to the *Conciliation and Arbitration Act* made it the duty of the Conciliation and Arbitration Commission to 'have regard for the likely effects on the economy when deciding national wage cases'. This new principle inevitably meant that government advice and suggestions on the 'economic effects' of wage decisions became more influential. Indeed, the new Labor government, elected in 1972 after 23 years of conservative rule, gave the opinion to the Commission in 1973 that substantial wage increases could be paid without significant inflationary consequences. This led to the approval of major increases in real wages. The same government was soon urging the Commission to reintroduce new cost-of-living adjustments to award wages.

INDEXATION

Whereas regular cost-of-living adjustments to the basic wage on an automatic basis had been abandoned in 1953 because of 'inflationary consequences', the mid-1970s found adjustments to the total wage (now known as **indexation**) reintroduced as part of an effort to moderate wage demands, reduce rampant inflationary pressures (see Chapter 14) and reduce **collective bargaining**, which was occurring outside the national wage principles. In its 1975 indexation decision, the Commission determined that:

1. award wages and salaries would be adjusted each quarter in relation to the most recent movement to the consumer price index (CPI)
2. indexation adjustments would not be automatic and the Commission could in principle be persuaded not to award increases 'in the economy's interest'
3. the only other grounds that would justify pay increases would be:
   - change in 'work value'—that is, changes in skill and responsibility attached to a job
   - catch-up of community movements—where a union claimed that 'relativities' had been lost. This reflected the principle of comparative wage justice referred to earlier and defined as the interlocking relationship between various wage rates within and between awards.

The indexation system was modified many times in the 1970s but ran into difficulties in periods of frequent industrial conflict when many wage increases occurred outside the arbitration process. Despite a number of conferences to try to salvage the indexation system, the Commission announced the end of the system in July 1981. Citing the high level of industrial disputes in key industries and the lack of commitment to the system, the Commission decided not to hear any further national wage cases before February 1982, although it would hear cases brought by individual unions.

During 1981 a major issue confronting the industrial relations system came with increased union efforts to secure a shorter working week. The Commission rejected a an agreement between Alcoa and the **Australian Council of Trade Unions (ACTU)** for a 36-hour week because of the fear of flow-ons and a reluctance to accept productivity bargaining as a way of obtaining shorter working hours. However, in December 1981 the Commission ratified an important metal trades case, which granted increased wages and a 38-hour week. This period witnessed so many wage increases for individual unions that in the May 1982 national wage case the Commission refused to grant any increases. It seemed that the era of national wage setting was over and that reliance on collective bargaining would continue and grow.

INDEXATION REVIVED: THE ACCORD

Prior to its election to office, the Australian Labor Party had reached a **Prices and Incomes Accord** with the ACTU, which spelt out agreement on several key issues. These included the need to return to centralised wage fixing; price surveillance of large producers; the maintenance of real wages; and support of bargaining for reduced hours on the basis of productivity changes. The Accord and its successors were to dominate the Labor government's policy on wages for the rest of the decade and into the 1990s. The Accords resulted, overall, in a long period of restraint in real wage growth and increased the national influence of the ACTU.

The National Economic Summit held by the new Labor government in April 1983 obtained agreement from union, political and employer delegates (including

the newly formed Business Council of Australia) for a serious return to centralised wage fixing under the authority of the Commission. Indexation was reintroduced although application of full indexation in following years was again uneven.

THE TWO-TIER SYSTEM

After extensive discussions and conferences completed early in 1987, the Commission introduced a new set of wage-fixing principles that in some measure brought to an end the previous three-year revival of the full indexation system. Meanwhile, the ACTU and a federal government trade commission released their report on an overseas mission known as 'Australia Reconstructed'. In this, the ACTU detailed methods by which the union movement could assist the government in dealing with the international payments crisis. The main solution was to increase the productivity of Australian workplaces, which would require industrial relations reform. Under a *first tier*, an amount would be distributed to all wage and salary earners. Under a *second tier*, an amount of wage increase, within specified percentage limits, could be *bargained* between employers and unions. Such increases in rates of pay or conditions would need to be justified on the basis of measures implemented to increase efficiency—a concept known as **productivity bargaining**.

SUMMARY TO THE END OF THE 1980S

The Conciliation and Arbitration Commission (and later the Australian Industrial Relations Commission) had, in national wage cases, faced many complex decisions. It had to find what it saw as a balance between economic reality, in terms of the state of the economy, and economic justice for workers covered by awards, as well as striving for industrial harmony. Some commentators argued that it was perhaps rather unfair that the Commission was being looked to, in the 1970s and 1980s, not just as an industrial peacemaker but also as a primary instrument in the various battles against inflation (see Chapter 14) and as an agent for structural change and productivity improvements. These later roles were not what the first Commonwealth Court was designed for. The original aim—the settlement of industrial disputes—is the subject to which we now turn.

SETTLEMENT OF INDUSTRIAL DISPUTES

When established in 1904, the Commonwealth Conciliation and Arbitration Court was expected to become involved in the settlement of industrial disputes over particular wages, conditions of work and so on in a given plant or industry. The most frequently publicised industrial action undertaken by unions has been the strike. **Strikes** bring hardship to striking workers and their families and are costly for employers and the economy in terms of total working days lost and bottlenecks that may be created throughout the economy. Although more working days are lost through illness and accident than through strikes, it is the concentration of work stoppages in a particular industry and at a particular time that makes strikes disruptive.

Strikes: a form of industrial action by which employees withdraw some or all of their labour.

The avoidance of such problems lay behind the original conception of the Commonwealth Conciliation and Arbitration Court, which was established on the Commonwealth's constitutional prerogative to make laws regarding the prevention of disputes extending beyond the limits of any one state. Organisations similar to the Commonwealth Court were also established in each state to deal with disputes regarded as purely intrastate.

THE COMMISSION

Under legislative changes introduced in the *Industrial Relations Act 1988*, the Australian Conciliation and Arbitration Commission was replaced by the Australian Industrial Relations Commission (AIRC). The AIRC consisted of a president and sufficient deputy presidents and commissioners to undertake its work (a total of 77 in 1997, including 21 dual (state/federal) appointees). The Commission carried out its **conciliation and arbitration** function through subgroups (usually involving a presidential member and a number of commissioners) which were made responsible for particular industries or groups of industries.

A full bench of the Commission (formed with a number of presidential members) could hear cases referred to it by commissioners, as well as other important matters such as appeals and the national wage case.

ARBITRATION PROCESS

The process by which an industrial dispute may traditionally be dealt with by the Commission is summarised as follows. The dispute could be formalised by a trade union serving a **log of claims**, which specified demands for changes in terms and conditions of employment, made to an employer or group of employers in more than one state. Rejection of these demands, or failure to respond, then gave the Commission jurisdiction to attempt to find a settlement. For technical reasons, the log of claims always made demands in excess of the union's expectations of success. This established what is known as an **ambit of dispute**. A counterproposal by employers can change the range of the ambit.

Negotiations could proceed privately, or voluntarily under the supervision of the Commission. Conciliation could result, but if necessary the case went to arbitration. Compulsory arbitration would be used if conciliatory action could not resolve a dispute. Such arbitration was compulsory in two senses—the arbitrator could require the parties involved to appear before the relevant tribunal, and the arbitrated ruling was meant to be binding on all parties. In some cases all parties could, with presidential approval, seek that the case be heard by a full bench. In such full-bench hearings the Commonwealth government could seek leave to intervene 'in the public interest'.

The final outcome of a Commission hearing was the determination of an **award** that specified minimum (but not maximum) terms and conditions affecting the various parties to the dispute. In addition to the awards that emanated from the Commission's arbitral role in settling disputes, there were many other awards, known as **consent awards**. These were agreements reached privately between unions and employers and then certified by the Commission. The Commission would register such an award only if it considered the agreement was in settlement of a dispute and not against the public interest. Such consent awards effectively had the equivalent status of an arbitrated award.

Although the jurisdiction of the Commission was constitutionally limited, by 1990 over one-third of all employees covered by awards were covered by federal awards. State industrial tribunals, which were created by state legislation and undertook conciliation and arbitration functions, largely tended to follow the federal lead. A major exception occurred in 1993, when a new Victorian government abolished Victoria's conciliation and arbitration system. This led the federal government to facilitate the move of many workers from state to federal awards. (In 1996, the Victorian government handed all its responsibility for industrial relations back to the Commonwealth.)

INCREASE IN INDUSTRIAL DISPUTES

A useful index of industrial unrest can be calculated as the *number of working days lost per thousand employees* (see Figure 15.1). From the 1960s, the trade union movement increased its use of collective bargaining within the conciliation and arbitration framework and used strong unions to gain benefits that would flow to others. Therefore the index jumped from an average of 237 in the 1960s to 658 in the 1970s—the highest on record since the 1920s. In addition, for the first time since the 1920s, the figure was higher than that for the United States. With these statistics in mind it is hardly surprising that Australia started to gain an international reputation as 'strike prone', although increasing industrial unrest was admittedly a worldwide phenomenon.

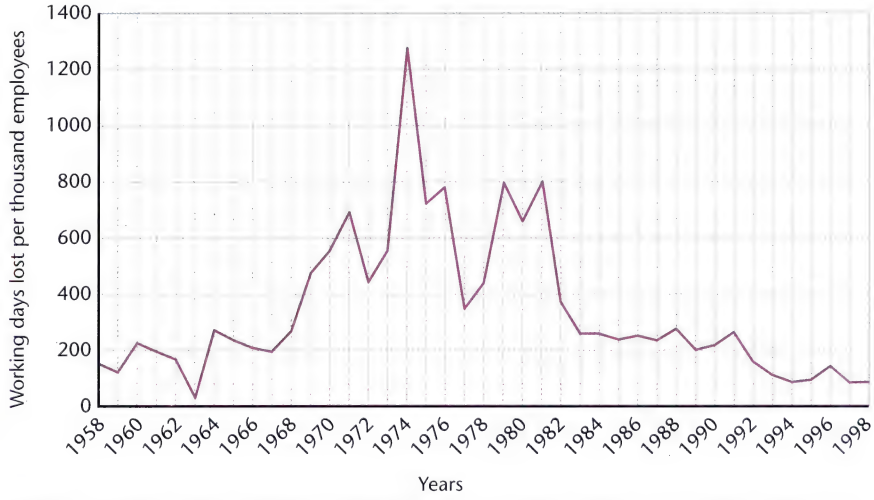


FIGURE 15.1
Industrial disputes—working days lost per thousand employees, 1958–98

The number of working days lost per thousand employees is an indicator of the severity of industrial disputation. Significant bursts in the early 1970s and 1980s are followed by a gradual decline in the 1980s, the period of the Accord, and low levels of disputation throughout much of the 1990s.

SOURCE: Australian Bureau of Statistics, Industrial Disputes, Australia, *ABS Cat. No. 6322.0, various issues.*

After a further jump in the number of industrial disputes and working days lost in the early 1980s, associated with the breakdown of indexation, these figures started to fall after 1982. Indeed, the 'new era of incomes policy' and the continued recession seemed to bring the disputes down, at least temporarily, to record low levels by the early 1990s. Some commentators have argued that the improved industrial dispute record in recent times was largely due to the Accord between the government and the ACTU, discussed earlier. However, it is very difficult to prove that the Accord was solely responsible for this improvement. In those times, changed economic circumstances, as well as public attitudes, may also have been important in reducing disputes. Further, other countries, such as the United States and Canada, experienced more dramatic falls in working days lost through disputes—in situations where collective bargaining, rather than central agreements like the Accord, were prominent.

Since the 1960s, there have also been some important shifts in both the causes of industrial disputes and the ways in which they were settled.

CAUSES OF DISPUTES

The causes underlying industrial disputes that led to work stoppages can be placed in four categories:

1. claims for changes in wages, hours of work or leave entitlements
2. working conditions and managerial policy on discipline and other workplace matters

3 'trade unionism', which includes disputes about non-union labour, disputes between unions and 'coming out in sympathy' with other unions

4 'other causes', which include political protests.

During the 1970s there was a significant increase in the percentage of disputes over wages, hours and other benefits. Although this trend continued into the early 1980s, this category was, on average, of reduced importance during the remainder of the decade and in the 1990s.

METHOD OF SETTLEMENT

Three methods used to settle disputes are:

1 by private negotiation—where unions and employers resolve the dispute themselves (often resulting in a consent award)

2 through the intervention of federal and state conciliation and arbitration authorities

3 by resumption of work without negotiation—such disputes would typically be short one-day protest stoppages. These are sometimes of a political nature.

In the 1970s, the number of disputes settled by private negotiation increased, while the use of conciliation and arbitration mechanisms fell. These figures support the argument that the influence of the Commission was gradually declining. Although the number of disputes settled privately fell in the 1980s, the number settled with central intervention also fell slightly for the decade. This was a trend that continued during the 1990s.

THE 1990s: MOVES TO DECENTRALISATION

An important era of Australian industrial relations developed with the revised Accord (Mark VI) developed in February 1990, which built on earlier two-tier awards and **award restructuring**. This agreement included a trade-off between wages and taxes, a wage increase and some degree of **enterprise bargaining**, to be based on productivity agreements. These agreements formed the basis of proposals put to the national wage case, held between December 1990 and February 1991. These moves were also supported by some state governments and employer groups.

THE ENTERPRISE BARGAINING PRINCIPLE

A significant decision was made in October 1991 by the Commission when it formally introduced the *enterprise bargaining principle.*

Enterprise agreements could be approved under sections 112 (consent awards) or 115 (certified agreements) of the *Industrial Relations Act 1988.* The Commission's ratification of an agreement would, however, depend upon 10 requirements. These included that the agreement be for a fixed term; mean no reduction in employee benefits; implement the structural efficiency principle; be negotiated through a single bargaining unit; and involve no further wage increases during the term of the agreement, apart from national wage decisions. In the context of the above elements, the no-further-claims commitment became redundant.

The Commission's decision on the enterprise bargaining principle signified a number of important redirections for its own role. In a sense, the Commission returned to its traditional role of concentrating on minimum rates of pay, in effect

allowing the parties involved to bargain total rates of pay. The Commission announced that it would largely have a 'facilitating' role in the new enterprise bargaining system. While it would conciliate on disputes over enterprise agreements, it would not arbitrate. What was not so clear at the time, however, was the future of national wage cases or whether the Commission would continue to have a formal 'concern' for the public interest.

ACCORD MARK VII

Before the federal election of March 1993, the ACTU and ALP negotiated a new set of agreements for 1993–96, known as 'Putting Jobs First'. The Accord Mark VII covered many areas, including measures to enhance job growth, increased superannuation provision by employers, tax reform, and various social policies. For the industrial relations system, some key elements were agreed to. The Accord encouraged the devolution of wage fixation via bargaining at workplace industry levels that would involve employees and their unions.

The registered award system would continue, and underpin the workplace bargaining system with access to arbitration. Further, a safety net of minimum award wages and conditions would be provided to protect all workers. In this regard, the Accord recommended minimum flat weekly increases in wages for each year of the new Accord agreement.

INDUSTRIAL RELATIONS AMENDMENT ACT 1992

Some important steps towards changing the role of the Commission in enterprise bargaining occurred in 1993 when the *Industrial Relations Amendment Act* came into effect. The intention of the legislation was to continue to encourage workplace bargaining and to cement the Commission's role in the certification of enterprise agreements. A set of criteria was introduced that the Commission proposed to use to certify an agreement. The enterprise agreement should contain:

1. *no disadvantage* to employees
2. a procedure for settling disputes
3. consultation by unions with affected members.

If an agreement applied to a single business, part of a business, or a single workplace, there should be a single bargaining unit to represent employees that comprised all relevant unions.

Such enterprise agreements would *not* be examined by the Commission in terms of the *public interest*, although the industrial relations Minister could, in extreme circumstances, apply for such an examination. However, the public interest test would continue to be applied by the Commission to certified agreements that applied more widely than to a single business.

Further parts of the Act included changes to streamline Commission operations and new provisions to apply to independent contractors. Other changes, following controversy about the abolition of the conciliation and arbitration system in Victoria, effectively allowed for greater participation of employees in the federal processes.

The move towards enterprise bargaining, after a slow start in 1992, certainly gained momentum in 1993. By mid-1993, over 700 enterprise agreements were in place, covering over 700 000 people. This represented roughly 10 per cent of the workforce, or nearly one-third of people under federal awards. Although enterprise agreements were developed across a number of sectors, the metals sector accounted for 40 per cent of enterprise agreements. Around 75 per cent of

service-sector employees were covered by 30 per cent of the registered agreements in banking, retail and the federal public sector. Further, it was clear that a few powerful unions had been dominant in the agreements reached. Many agreements were not in fact negotiated at the enterprise level but were really the result of industry bargaining.

Most employer groups pointed out that, in their view, progress was impeded. This, it was argued, was partly because of the compulsory need to involve unions. Around 70 per cent of the private sector was, after all, non-unionised. Some employer groups also questioned the value of the Commission's involvement, queried the need for national wage cases and claimed that any form of central interference, such as the public interest test, was counter to genuine enterprise bargaining in a truly deregulated environment. Further, it was argued that legislative provisions were inadequate. Management skills were also probably lacking when it came to negotiating enterprise bargains.

Meanwhile, trade union groups argued that union representation was crucial to the success of fair enterprise bargaining. Further, the ACTU continued with its view that employees in industrially 'weak' situations needed protection in the form of a centrally guaranteed safety net of minimum-wage increases.

1993 ELECTION RESULT

Industrial relations was a prominent issue in the election campaign, with the incumbent Labor government promising an important continuing role for the Commission while developing an understanding with the ACTU to further workplace bargaining within an award system. The coalition campaign (entitled 'Jobs Back') promised the abolition of awards, an end to compulsory arbitration and the widespread introduction of workplace agreements overseen by a new office of an Employee Advocate.

The re-election of the ALP in March 1993 ensured that some changes in previously agreed directions would be made. Progress towards enterprise agreements was still slow. The Commission considered some changes in late 1993 with the idea of re-introducing arbitration into enterprise bargaining, as a last resort, where productivity issues or past history was seen as warranting intervention. Such concerns were, however, overtaken by a set of legislative reforms introduced by the re-elected government in 1993.

INDUSTRIAL RELATIONS REFORM ACT 1993

The reforms, which took effect from March 1994, were very complex. Promotion of enterprise and workplace bargaining became a key theme. References to productivity bargaining in the new legislation were minimal but reference to 'efficiencies' to be gained from workplace and enterprise bargaining became explicit for the first time. The major legislative changes included the following:

1 The award system would become a 'safety net' and workplace and enterprise bargaining would be promoted through a new Bargaining Division of the Commission. Thus, two divisions or 'streams' of agreements were recognised. Agreements could now take two forms: certified agreements, and enterprise flexibility agreements. The latter would apply to a single enterprise. The Commission would be required to ratify certified agreements negotiated by employers with unionised and with non-unionised groups. The agreements negotiated at a single workplace would be subject to a no-disadvantage test. Agreements involving multiple workplaces would also include a public interest test. Further, the Bargaining Division could hear submissions from

unions concerning such agreements. Effectively, the mechanisms for arbitration of a form of collective bargaining were being intertwined with that of compulsory arbitration in an effort to partially decentralise the industrial relations system. The Labor government stated that the intention of the reformed legislation was to extend the ability to make enterprise bargains available to non-unionised workers (who then accounted for nearly three-quarters of the private sector workforce).

2 A feature of the new legislation was the concept of bargaining 'in good faith'. Industrial action (strikes and lockouts) were defined as 'protected' during an approved bargaining period, except in the case of enterprise flexibility agreements. The Commission could terminate a bargaining 'period' if it believed that the industrial action was threatening to matters such as public safety or the national economy.

3 A new Industrial Relations Court was established to make certain judgements, where necessary regarding the reformed legislation. The reforms drew not only on the Commonwealth's industrial relation powers but also its corporations and external affairs powers allowed for in the Constitution. While the new Industrial Relations Court was established in a judicial role over the *Industrial Relations Act* it also received responsibility for secondary boycotts transferred from the *Trade Practices Act 1974*.

Despite apparent general interest in enterprise agreements, growth in such agreements continued to be modest. Many explanations were offered. Prominent comments included the fact that traditional 'channels' of industrial agreements were still available along lines that parties were accustomed to. Many workplace reforms that could be encouraged by enterprise bargains were occurring anyway, largely due to recessionary pressures. Certainly some parts of the reforms (such as new legislation covering unfair dismissals) brought the entire reform movement into question.

Business IMPLICATION REAL UNIT-LABOUR COSTS COUNT



Many companies have stated that wages are not competitive in Australia in many areas, and so they expect to move their operations offshore. However, this may not always be a wise decision. Wages are often low where workers lack complementary factors that make labour productive. These factors include education, health, and investment in infrastructure and social services. Also, other business costs such as rental, property costs, infrastructure investments and training costs may be higher in other countries, which will erode any wage differences between regions.

Businesses often get confused by the differences between labour costs per unit of production and wage rates per hour. Wage rates are something quoted on an hourly basis. Labour costs are inclusive of all on-costs for labour (including the food and accommodation that employers must provide workers in some countries). Labour costs also reflect the productivity of the labour. More productive labour, even if it costs more per hour, can actually save businesses money. The implication—low wage rates may not imply low-cost production; real unit-labour costs—the cost of labour per unit of output—are really what matter to your competitive position.

POST-REFORM DEVELOPMENTS

Several key events involving changes to the industrial relation system can be identified following the introduction of the *Industrial Relations Reform Act*.

NATIONAL WAGES AND THE ACCORD MARK VIII

In the first national wage case following the legislative changes, the Commission agreed to safety net provisions, including three $8-per-week wage increases (over an 18-month period from September 1994). Unions had to make applications, and the increases were made available to only those cases where enterprise agreements had been tried, but unsuccessfully. A commitment by the government and the ACTU to the safety net concept was reinforced in June 1995 with announcements in the Accord Mark VIII. The Accord retained a commitment to enterprise bargaining but acknowledged that the federal unfair dismissal provisions were working badly (the latter were modified in January 1996).

During 1995 the number of federally registered enterprise agreements in the non-metals private sector grew until the last part of the year when numbers declined. Many employers were, however, unhappy that enterprise agreements were not working as intended but becoming in their view 'add-ons' to awards—an opinion disputed by other commentators. No legislative changes in industrial relations occurred in 1995 but several important test cases occurred.

MTIA CASE

The Metal Trades Industry Association (MTIA) argued to the Commission that an employer should be exempt from paying safety net increases where an employer had informal agreements to pay over-award amounts. In other words, such informal agreements should be recognised as enterprise agreements. The Commission ruled against the MTIA so that employers with informal arrangements were ordered to pay the safety net adjustment in addition to over-award payments. However, those employers with certified agreements and enterprise flexibility agreements were not required to do so. The Commission's decision was supported in the Industrial Court in May 1995.

ENTERPRISE FLEXIBILITY AGREEMENTS TEST CASE 1995

Following much confusion about the new legislation and various cases heard regarding the enterprise flexibility agreement process the Commission brought down a 'landmark decision' in May 1995. This became known as the Enterprise Flexibility Agreements Test Case. A key issue was the degree to which unions could be entitled to be involved in the process of determining enterprise flexibility agreements. The Commission, in full bench, observed three levels of union involvement:

1. As defined in the legislation an eligible union (a union bound by an award that binds the employer and which has employees in the enterprise) should be told of intended negotiations and be involved, even if employees did not request such involvement.
2. A non-eligible union, if authorised by employees, could be a part of negotiations.
3. Unions bound by an award applicable at an enterprise would be entitled to be *heard* at approval proceedings. These unions would, however, have no right to be directly involved in negotiations. In such cases it was thought 'prudent' by the full bench that employers should consult relevant unions.

WEIPA DISPUTE

On 10 November 1995 the Commission issued a certificate that allowed CRA to take legal action against workers striking at Weipa. The escalation of this dispute, involving 3000 coal workers employed by CRA who walked off the job, was supported by national stoppages in the coal and waterfront industries. The ACTU encouraged the dispute because it viewed the issue as essential to the future of union involvement in wage determination. In particular, union concerns were that workers doing equal work should receive equal pay and that unionised workers should not be discriminated against in terms of their preferred bargaining form. Following a special hearing the Commission effectively agreed with this principle. Other Commission determinations included an 8 per cent increase for all Weipa workers on awards.

1996 ELECTION

By 1996 collective enterprise agreements still covered only about one-third of the workforce, with the rest divided between those dependent on awards and a few on individual contracts. In the build-up to the 1996 election, industrial relations issues were again prominent. Employer groups continued to urge for more radical reforms while the ACTU continued to focus on existing institutional arrangements.

The election of a Liberal–National government in March 1996, after 13 years in opposition, meant that significant changes were likely to become a reality given its large majority in the House of Representatives, although some difficulties in enacting new legislation were expected in the Senate. After long delays and many Senate amendments a new era in industrial relations was embedded in a new Act intended to simplify the industrial relations system.

WORKPLACE RELATIONS ACT 1996

The *Workplace Relations and Other Legislation Amendment Act 1996* amended and retitled the former *Industrial Relations Act 1988*. The new legislation provided a framework for a more direct relationship between employers and employees, with a much-reduced role for third-party intervention and greater labour market flexibility.

Basically, the major objects were to push the industrial relations system towards:

1. giving main responsibility for industrial relations and agreements to employees and employers at the enterprise and workplace levels
2. shifting the award system to providing a safety net of 'fair' and enforceable minimum wages and conditions
3. ensuring freedom of association.

Further clauses were aimed at reducing discrimination and giving effect to Australia's obligations with regard to international labour standards. We will now examine some key features of the legislation.

AWARDS

Some major simplifications were introduced. Awards would focus on the safety net on minimum standards so that the Commission's arbitral jurisdiction was confined. In most cases it could only make awards to settle disputes in relation

to 20 'allowable' award matters. Transitional arrangements were made to ensure that all existing awards would be simplified to this style within 18 months. No new paid-rates awards would be allowed. The new Act allowed choices about agreements to be made as far as possible at enterprise and marketplace levels and between employees and employers. To provide this choice, the Act provided for certified agreements (CAs) and Australian workplace agreements (AWAs).

CERTIFIED AGREEMENTS

The Act intended to make CAs more accessible. They could be reached directly with employees, particularly in workplaces with few or no union members. However, 'relevant' unions would be able to participate and become a party to the agreements.

The Commission would be responsible for ratifying such agreements and would determine that a no-disadvantage test was passed and that a majority of employees were in favour. Enterprise flexibility agreements were to be phased out. The Commission could arbitrate in a CA in special circumstances or as a last resort.

AUSTRALIAN WORKPLACE AGREEMENTS

These were individual agreements between an employer and employee. While they could be reached collectively, they would have to be signed individually. Employees were allowed to appoint a 'bargaining agent' (which could be a union) to negotiate, but there would be no *uninvited* union involvement.

EMPLOYMENT ADVOCATE

A new office was established to be known as the Employment Advocate with a principal role of approving AWAs. The Advocate would require that the agreement met a no-disadvantage test and that employees had actually consented to the agreement. If there were doubts, these were to be referred to the Commission.

The Advocate Office would also have other functions such as providing advice and handling breaches of agreement. The Act also enabled the Advocate to have regard to the needs of workers in 'disadvantaged' or weak bargaining positions and to other social obligations.

COMPULSORY UNIONISM

The Act ensured *freedom of association* and allowed unions to be registered with as few as 50 members (down from 100). Provision was made for enterprise-based unions to be created. Further, preference clauses and compulsory unionism were prohibited and procedures allowed for the disamalgamation of existing unions.

INDUSTRIAL ACTION

During negotiations for a CA or an AWA there would be a right to industrial action (strikes and lockouts) during a defined bargaining period but not while agreements were in operation. Meanwhile, the Commission had power to suspend or terminate a bargaining period and its powers were strengthened to prevent or stop industrial action. Strike pay was banned.

OTHER PROVISIONS

Among the many complexities of the legislation a number of other significant changes warrant mention:

1. Boycott provisions were returned to the *Trade Practices Act*.
2. A new unfair dismissal procedure based on the corporations powers was established.
3. The jurisdiction of the Industrial Relations Court was transferred to the Federal Court.
4. The Commission's powers to order equal conditions for males and females for work of equal value were retained.

ROLE OF THE AIRC

Clearly the role of the Commission was meant to undergo a major shift. It would now be concerned with unfair dismissals, providing safety nets and overseeing the simplification of the award process. It would continue to have conciliatory powers in relation to 'protected' industrial action and resolving disputes; however, it would have limited arbitration powers which would be restricted to 'exceptional' matters.

Business IMPLICATION

IT'S NOT THE WAGES, IT'S THE SYSTEM THAT MIGHT COUNT



The importance for wage–cost outcomes of the system under which labour may be organised is perhaps best described by the differences that existed between the labour costs of BHP and some of its competitors in the late 1990s and early 2000s. While the wages and salaries paid to workers did not differ much between producers, BHP's competitors used workplace agreements that allowed their workers to be more productive, and to reduce their idle time, through more flexible job specifications and a greater ability to determine their own actions. The implication of these arrangements was that competitors such as Rio Tinto had labour costs of almost half those of BHP for similar mining operations. Their workers were simply more productive, which reduced their overall wage-and-salary cost on similar mining operations. Much as this holds for a mining company, so it can hold for entire economies competing in global markets.

DIVERGENT VIEWS

The Howard coalition government believed that the new *Workplace Relations Act* provided a framework for cooperative workplace relations which would promote economic prosperity and the welfare of the Australian people. Certainly there had been support for this view from peak employer bodies both in submissions on the draft legislation and in reaction to the passage of the Bill. The Australian Council of Commerce and Industry saw the reforms as a vast improvement on the *Industrial Relations Act*. The Business Council of Australia pointed to the need for such changes to enable Australia to prosper in the global economy. The abolition of paid-rates awards was welcomed as these were seen to be prevalent in situations where unions had strong industrial power. In response to the accusation that the legislation might lead to growth in inequities between workers, employers were quick to point out a counter view that there was a strong correlation around the world between labour market flexibility and unemployment. Therefore, inequities between the employed and the unemployed might be reduced by economic prosperity and increased employment!

The ACTU took an opposite view and opposed the majority of the Act's provisions, including changes to the Commission's role; the Employment Advocate; abolition of paid-rates awards; provisions for the disamalgamation of unions; penalties for industrial action; the transfer of secondary boycott jurisdiction back to the *Trade Practices Act*; and most changes to provisions for termination of employment. Most of this opposition was, historically

Global SNAPSHOT WAGE DIFFERENCES AROUND THE GLOBE



The average wages outcome around the world depends on a variety of factors: the negotiation process that determines wages; the role of unions; productivity; and minimum wage laws. Here we present data on the US dollar value of average monthly earnings in 1999 to allow an international comparison of the average level of wages.

Country	Average monthly earnings in 1999 (US$ 1998 prices)
Australia	1554.9
Brazil	371.3
Canada	1886.5
China, mainland	80.0
China, Hong Kong SAR	1432.8
France	2467.5
Germany	2430.8
Greece	1602.2
India	84.0
Indonesia	20.9
Italy	2645.5
Japan	3162.9
Malaysia	628.3
Mexico	190.5
New Zealand	1440.4
Philippines	118.4
Russian Federation	109.5
Singapore	1512.4
South Korea	998.8
Spain	1562.5
United Kingdom	2739.3
United States	1909.3

SOURCE: Euromonitor, *1999.*

Questions

1. Which five countries had the highest value of average monthly earnings expressed in US dollars? Which five countries had the lowest value of average monthly earnings expressed in US dollars? Do the differences between the average monthly earnings in each of these countries signify the differences that exist in the economic standard of living in each country? Why or why not? Explain.
2. What factors may affect the interpretation of the real value of average monthly earnings reported in the table? Based on your answer, discuss whether the comparison of earnings presented here is useful.

speaking, unsurprising. Nevertheless the ACTU attracted much criticism—some of it from unions—for being 'regressive'. Indeed the ACTU went to the national wage case hearing in late 1996 and early 1997 with a proposal for a Living Wage Claim. Using ABS data, the ACTU argued that the total commodity and services budget for the lowest-paid 20 per cent of households was below their household incomes. Using this issue of 'wage poverty', the ACTU argued for significant safety net increases and a new 'floor' under wages by increasing minimum award rates for 'entry level' jobs. Government and employers believed the proposed minimum wage increases were too large and had concerns about higher-paid workers seeking further increases to preserve relativities. Further, some observers accused the ACTU of 'winding the clock back' nearly 100 years to the issues looked at in the Harvester Judgement discussed earlier in this chapter.

In 1997, while the outcomes of probable test cases were awaited, uncertainty grew about the impact of the implementation of the very complex *Workplace Relations Act*. The introduction of the legislation was greeted with a 'spontaneous protest' by the waterfront workers who closed down all city ports overnight. Fears of a period of volatility and industrial unrest were also fuelled by anticipated claims of the Australian Manufacturing Workers Union (AMWU) which was pushing for a 15 per cent wage claim along with other benefits worth about 2 per cent. Some commentators compared this situation to the 1981 metal industry campaign which had far-reaching effects. Many employers held the view that 1997 onwards was likely to be industrially 'messy', and some had fears of a major blow-out of wages in areas such as metals, ports and coal. The ports, particularly, were an area where major disputes occurred, but emerged as an area where there were 'wins' on each side. The unions retained their role at many ports, but the stevedores extracted considerable concessions on workplace reform.

Key test cases have been conducted around the issues of closed shop, the no-disadvantage test and the general union push for wage increases across the board. In late 1999, BHP faced considerable difficulties as it attempted to implement a system of employment contracts with its workers. The late 1990s were certainly unstable as Australia again faced 'uncharted waters' on which its industrial relations system had been launched. A key question hanging over many industries is the likely outcome of attempts by the metals unions to ensure that workplace agreements have a common expiry date, allowing a pattern of de facto industry bargaining to emerge again.

Concept highlights

- The path of wage fixation in Australia has been one that has moved from a high level of centralisation to a situation of relatively 'free' negotiation in the form of individual contracts and workplace agreements. However, awards still underpin the wages and conditions that apply to many workers.
- The Australian Industrial Relations Commission (AIRC) and its predecessors traditionally decided the national wage case. Over time, the criteria used in national award decisions changed significantly, and have included the 'needs criterion', 'capacity to pay' and 'state of the economy' or 'public interest'.
- Originally, wage fixation decisions were made on the basic wage and margins for skill. Since 1967 decisions have been made on total wages for categories of skill. A minimum wage level was also set. Awards were indexed for price changes after 1975, although at times plateau and partial indexation have been applied. The indexation system temporarily broke down in the early 1980s.

- The wage fixation system has more recently been influenced by the Accord between ALP governments and the ACTU. After a few years of return to indexation, the introduction of a two-tier system allowed limited productivity bargaining for wage increases.
- By the mid-1990s, the system had moved significantly towards decentralisation and enterprise bargaining under a system of agreements certified by the AIRC. Under the Howard coalition government elected in 1996, this has evolved into a system of workplace agreements and individual contracts backed by a simplified system of awards.

Asian FOCUS

WAGES AND THE RECOVERY FROM THE ASIAN CRISIS

Economic recovery usually suggests increases in product demand and output. Associated with this is an expectation of an increase in the derived demand for labour, and upward pressures on wages. However, this need not always occur.

One of the first economists to flag Asia's financial crisis has punctured euphoria over the region's recovery with a warning that rebounding growth has failed to bring rising wages and employment.

Yilmaz Akyuz, the chief economist of UNCTAD, the United Nations trade and development agency, also said international policy-makers had so far failed to make changes to the architecture of the global financial system that might avert a repeat of the Asian crisis.

'The danger is complacency ... economies are recovering, but people aren't,' Akyuz said.

UNCTAD drew attention in 1996 to Asia's financial vulnerabilities and said it could not rely on continuing high rates of export-led growth. The region's crisis hit in mid-1997.

Output has since rebounded smartly across Asia, luring foreign investors back into the region. But Akyuz said UNCTAD believed the health of a country's economy should not be judged by the buoyancy of its stock market or its currency's strength.

In Asia's case, overall per capita income might be returning to pre-crisis levels, but many poor people found themselves even poorer than before, he said.

South Korea is leading Asia's rebound. But Jun Kwang Hoo, a special adviser to Korean Finance Minister Lee Hun Jai, acknowledges that the recovery has caused pain, saying that the income gap between rich and poor has widened ...

SOURCE: Reuters, 'Wages Fail to Reflect Revival', Business Asia, *25 February 2000.*

Questions

1. What are the key determinants of the demand for labour? Given these determinants, explain why economic recovery in Asia might not lead to an increase in the demand for labour.
2. Does an increase in the demand for labour necessarily mean that wages must rise? Why or why not?
3. In what way is the degree to which wages rise as a result of economic recovery dependent on both the systems used to negotiate wages and the level of unemployment in the economy? Explain.
4. Briefly discuss some of the factors that might prevent wages for some groups in Asia rising as their economies recover. What impact will this have on the equality of income distribution in these countries?

RECAP: ALTERNATIVE MACROECONOMIC PERSPECTIVES

In Chapter 13 and 14, we looked at number of theories purporting to show how the macroeconomy operates. In particular, the central ideas and policies of Keynesianism, monetarism, rational expectations theory, and supply-side economics were presented. This chapter has focused on wages and incomes policies that attempt to influence the supply-side of our economy's equation—to influence the movement in, and shape of, the aggregate supply curve.

Table 15.1 summarises major aspects of these theories and policy perspectives. In reviewing the table, note that there is no direct reference to the terminology 'new classical economics'. This viewpoint is simply the viewpoint associated in a general way with the natural-rate hypothesis, which asserts that the economy tends automatically to achieve equilibrium at its potential level of output—at that level of output that is consistent with the natural rate of unemployment. The natural-rate hypothesis is supported by economists of the monetarist and rational expectations persuasions.

SOME LESSONS

What observations or lessons, if any, have emerged from Australia's economic experiences of the past two and a half decades?

INTERDEPENDENCE

Australia is closely linked to the world economy, and this international interdependence can be an added source of macroeconomic instability. Economic interdependence means that our domestic economy may be subject to more and more destabilising 'shocks', which we cannot directly control. An example of this type of shock is the terms-of-trade decline during the mid-1980s. Another aspect is the impact that economic policy can have on the level of the exchange rate—through interest rate changes—and in turn the impact that changes in the exchange rate can have on the effectiveness of economic policy (Chapters 9 and 12).

EXPECTATIONS

Increasing attention has been paid to the disturbing possibility that policy decisions may be negated by the expectations which those policies generate. There is also greater awareness that expectations can play a causal role in the inflationary process and interfere with its resolution. This is reflected in the current stance of monetary policy as conducted by the Reserve Bank (see Chapter 12).

Many economists feel that the stubbornness of inflation during the 1980s was related to the intensification of inflationary expectations. After ten years of continuous inflation, expectations of continuing inflation came to be widely held and built into wage demands, consumption and investment decisions, interest rates and so on. These actions generated continued inflationary pressures, even in the face of constraints on aggregate demand. The severity of the recession of the early 1990s, and the determination of the Reserve Bank to maintain a low level of inflation, severely reduced inflationary expectations. This paved the way for a low-inflation environment during the late 1990s.

Table 15.1 Alternative macroeconomic theories and policies

Issue	*Keynesianism*	Natural-rate hypothesis *Monetarism*	*Rational expectations*	*Supply-side economics*
View of the private economy	Inherently unstable	Stable in the long run at the natural rate of unemployment	Stable in the long run at the natural rate of unemployment	May stagnate without proper work, saving, and investment incentives
Cause of the observed instability of the private economy	Investment plans unequal to saving plans (changes in *AD*); *AS* shocks	Inappropriate monetary policy	Unanticipated *AD* and *AS* shocks in the short run	Changes in *AS*
Appropriate macroeconomic policies	Active fiscal and monetary policy; some use of income policies	Monetary rule	Monetary rule	Policies to increase *AS*
How changes in the money supply affect the economy	By changing the interest rate, which changes investments, and real GDP	By directly changing *AD*, which changes GDP	No effect on output because price-level changes are anticipated	By influencing investment and thus *AS*
View of the velocity of money	Unstable	Stable	No consensus	No consensus
How fiscal policy affects the economy	Changes *AD* and GDP via the multiplier process	No effect unless money supply changes	No effect on output because price-level changes are anticipated	Affects GDP and price level via changes in *AS*
View of cost-push inflation	Possible (wage-push, *AS* shock)	Impossible in the long run in the absence of excessive money supply growth	Impossible in the long run in the absence of excessive money supply growth	Possible (productivity decline, higher costs due to regulation, etc.)

DEMAND, SUPPLY AND POLICY

Economists and policy makers are increasingly aware that the state of the macroeconomy depends upon both aggregate demand and aggregate supply.

While the demand-oriented analysis of Keynesianism has waned in prominence, the supply-oriented view of the supply-side economists and the views of the new classical economists have been used to provide new insights into the operation of the macroeconomy and guidelines for economic policy. Thus, during the 1980s and throughout the 1990s, increasing use has been made of supply-oriented policies to achieve longer-term economic objectives. We have seen moves to increasingly deregulate markets, the process of financial deregulation being one of the major achievements of the 1980s, but these moves are also reflected in the move towards our system of enterprise bargaining in the labour market. Both the federal and state levels of government have committed themselves to an ongoing process of microeconomic reform and privatisation of

government firms. Each of these moves reflects a greater belief in the properties of markets, a belief often associated with those known as 'economic rationalists'.

We have also gained important insights into the limitations and dilemmas associated with economic policy. For example, there is no demand-side policy that will simultaneously reduce both the rate of unemployment and the rate of inflation. And observations of overseas experience with supply-side policies—for example, the failure of Reaganomics in the United States throughout the 1980s—suggested that government may have very little control over aggregate supply in the short run. We are also now more alert to the fact that demand-side policies have supply-side effects, and vice versa.

SUMMARY



1 Market policies, wage–price (incomes) policies, and supply-side policies have been proposed as means of preventing or alleviating stagflation. Market policies aim to change the shape and position of the short-run aggregate supply curve. They may also be intended to reduce the downward price stickiness associated with the 'ratchet' effect. Market policies consist of employment and training programs designed to reduce labour market imbalances, and pro-competition policies that reduce the market power of unions and companies.

2 An assessment of the success of employment and training programs in assisting in the control of stagflation is difficult. This reflects the low skills and high unemployment rates of the individuals on which these policies tend to focus, and the extent of their implementation. The potential impact of pro-competition policies may also be questioned. Pro-competition polices are subject to substantial political interference by the parties affected. Addititionally, many economists question the degree to which such policies prevent the development of big business and prevent the abuse of market power. Some economists feel that big business and market power are necessary to ensure that companies have sufficient resources to engage in innovation and development.

3 Incomes policies take the form of wage–price guideposts or controls. Wage–price guideposts can be either voluntary or mandatory. The basic wage guidepost is that wage rates in all industries should rise in accordance with the rate of increase in labour productivity for the nation as a whole. The basic price guidepost is that prices should change to compensate for changes in unit labour costs.

4 Economists have debated the desirability and effectiveness of incomes policies in terms of workability, potential impact upon resource allocation, and incompatibility with freedom of choice when mandatory.

5 The path of wage fixation in Australia has been one that has moved from a high level of centralisation to a situation of relatively 'free' negotiation in the form of individual contracts and workplace agreements. However, awards still underpin the wages and working conditions that apply to many workers.

6 The Australian Industrial Relations Commission (AIRC) and its predecessors traditionally decided the national wage case. Over time, the criteria used in national award decisions changed significantly, and have included the 'needs criterion', 'capacity to pay' and 'state of the economy' or 'public interest'.

7 Originally, wage fixation decisions were made on the basic wage and margins for skill. Since 1967 decisions have been made on total wages for categories of skill. A minimum wage level was also set. Awards were indexed for price changes after 1975, although at times plateau and partial indexation have been applied. The indexation system temporarily broke down in the early 1980s.

8 The wage fixation system has more recently been influenced by the Accord between ALP governments and the ACTU. After a few years of return to indexation, the introduction of a two-tier system allowed limited productivity bargaining for wage increases. This was encouraged in later years of the Accord, with productivity bargaining becoming a centrepiece of the wages-setting process.

9 By the mid-1990s, the system had moved significantly towards decentralisation and enterprise bargaining under a system of agreements certified by the AIRC. Under the Howard coalition government elected in 1996, this has evolved into a system of workplace agreements and individual contracts backed by a simplified system of awards that aims to provide a 'safety net'. The use of individual contracts and workplace agreements has, however, increased the potential for wages breakouts, especially in areas with labour shortages.

10 Table 15.1 provides a useful summary and review of alternative theories of employment.

KEY TERMS *and* CONCEPTS *to remember*



ambit of dispute	501	incomes policies	493
Australian Council of Trade Unions (ACTU)	499	indexation	499
award and consent awards	501	log of claims	501
award restructuring	503	market policies	491
basic wage	497	minimum wage	498
capacity to pay	497	needs criterion	497
collective bargaining	499	Prices and Incomes Accord	499
comparative wage justice	498	productivity bargaining	500
conciliation and arbitration	501	strikes	500
cost-of-living adjustments	497	two-tier system	500
enterprise bargaining	503	wage–price controls	493
Harvester Judgement	497	wage–price guideposts	493

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What are wage–price guideposts? What is their role?

2 Indicate in detail the relationship between money wages, productivity and unit labour costs. How can wage–price guideposts maintain these arrangements? Explain.

3 What specific problems are associated with the use of wage–price guideposts and controls? Evaluate these problems and note the arguments for and against guideposts and controls.

4 What do you consider to be the major developments in Australia's industrial relations system before World War II? List each.

5 What have been the responsibilities of the Commonwealth Conciliation and Arbitration Commission and its successors? Can you account for the increased difficulties in the operation of these bodies?

6 Describe the causes of industrial disputes, and the various means by which an industrial dispute may be resolved.

7 What reasons lie behind the increase in industrial disputes in the early 1980s, and their recent reduction?

8 Evaluate the two-tier system, outlining the difficulties involved in productivity bargaining.

9 Explain the ACTU and employer association approaches to enterprise bargaining. How do their views differ in relation to the role of:

(a) unions?

(b) the Australian Industrial Relations Commission?

(c) national wage cases?

(d) the 'public interest'?

(e) the enforcement of awards?

10 Where is the current wages fixation system heading? What potential problems may emerge due to the focus on individual agreements and workplace contracts?

Problems & exercises

1 Imagine you are a conciliator brought into a metal trades dispute. What information would you require? How would you evaluate the case and attempt conciliation? List your information requirements and the bases on which you would make your decisions.

2 'Controlling prices to halt inflation is like breaking a thermometer to control the heat. In both instances, you are treating symptoms rather than causes.' Do you agree? Does the correctness of the statement vary when applied to demand-pull and to cost-push inflation? Explain.

Application & analysis

1 Obtain press information on a recent national wage decision. Examine

(a) the trade unions' claims

(b) the employers' case

(c) government submissions.

Evaluate all three and the final decision made by the Commission.

2 What recent developments have occurred in workplace relations? Visit the website of the Department of Employment, Workplace Relations and Small Business at:
http://www.dewrsb.gov.au/

You can find information on workplace relations, agreements and important recent developments, as well as the associated legislation. Note the major recent developments and their implications.

3 What is award simplification? What processes does it involve? What is its rationale? Describe each of these briefly. You will find information at the Department of Employment, Workplace Relations and Small Business website.

4 What role does the union movement see itself playing in Australia's future wage negotiations processes? To answer this question, refer to the ACTU's website at:
http://www.actu.au/

A LAST WORD EUROPE FLOPS

Growth in labour productivity is a key element in determining the rate of increase in the costs of production. It is also one of the bases for determining the rates at which employment and output growth can safely occur without inducing excessive inflationary pressures within the economy. In Europe, it appears that all is not well on the productivity front, suggesting that, given current labour market practices, unemployment will not be brought under control in the near future.

A new economy? Not in Europe. Ignore all the blather about the Internet revolution. Look at the figures instead. Productivity growth in the euro area last year was a miserable 0.6 per cent, its slowest since 1975. If sustained, this slump would be disastrous for economic growth, in a continent already saddled with high unemployment.

Until recently, the euro area was notching up some impressive productivity gains. Indeed, it has outpaced America for most of the past 25 years. From 1973 to 1995, productivity growth averaged 1.6–1.7 per cent in France and Germany, compared with a mere 0.4 per cent in America. But America overtook the euro area in 1995. And over the past two years, America's productivity growth has bounded ahead, while the euro area's has taken a dive.

This downturn is partly cyclical. Although core growth has recently picked up in the euro area, it has been disappointingly low for most of the past two years. When the economy slows, productivity growth usually falls too, because firms are reluctant to fire workers and mothball factories. That is especially true in continental Europe, where companies are often constrained by rigid employment-protection laws.

But there is more to the recent decline than sluggish demand. Productivity growth, which tends to track GDP growth quite closely, has fallen unusually far of late ... One reason for this may be that the rate of technological progress has slowed. In that case, prospects for long-term economic growth, which is the sum of productivity growth, employment growth and the increase in the capital stock, would be grim.

But do not despair. A more likely explanation is that the economy is adjusting to some much-needed labour-market reforms. That, at any rate, is the view

of Robert Prior-Wandesforde, an economist at HSBC, a British bank. If he is right, economic growth need not slow down even in the short term, because such reforms may boost employment growth.

Many European countries, notably the Netherlands, France and Spain, have combined labour-market reforms with wage restraint in recent years. This has encouraged firms to employ more young, part-time and unskilled workers, whom previously they could not afford to hire. Just look at the euro area's unemployment rate. In previous recoveries, it scarcely dipped. Yet, despite patchy economic growth over the past two years, it has fallen from 11.2 per cent to 9.5 per cent.

Weak productivity growth may in fact be just the flip side of this job-creating economic growth. Employing more, but less productive, workers lowers the average skill level of the labour force. So firms have to use more resources to achieve a given rise in output, and productivity growth falls. Strikingly, despite low GDP growth, productivity growth has been better in Germany and Italy, which have done little to deregulate labour markets, than in France and Spain.

The deterioration of Europe's productivity growth is probably not as bad as it seems. But EU leaders cannot afford to relax. Even allowing for its reforms, Europe's productivity performance is bad compared with America's. And a demographic timebomb is ticking. As Europe's baby-boom generation retires, the population of working age will fall faster than in America, where it is still being replenished by immigration. Unless European governments get more people into work by pressing on with labour-market reforms, employment growth will soon grind to a halt, dragging GDP growth down. To stave off stagnation, Europeans would then be reduced to praying for the miracles of the new economy.

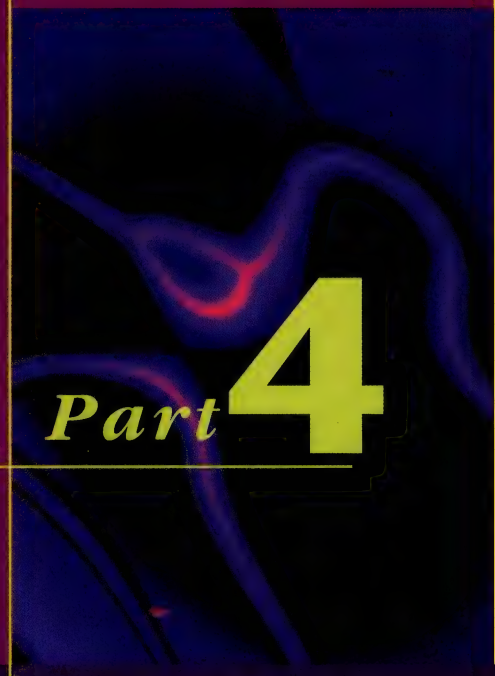
SOURCE: Economist, *15 April 2000.*

Questions

1 What factors are thought to have affected the rate of productivity growth in the euro area over recent years? In what sense are many of these a direct consequence of rigidities in the labour market? Explain.

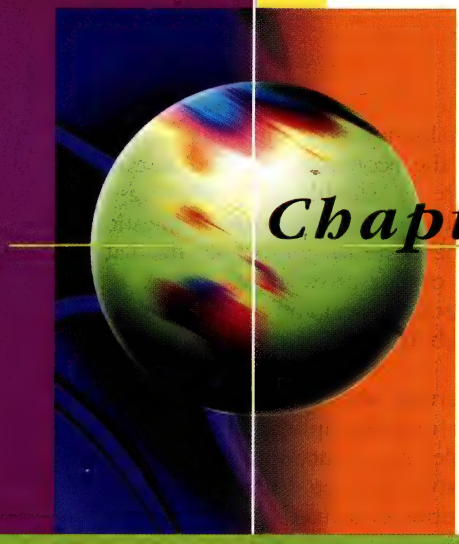
2 Of what concern is the fall in productivity growth for the longer-term economic prospects of the euro area? Discuss some of the emerging issues raised in the article.

3 What does the article suggest is still required in countries in the euro area if they are to reduce unemployment, and increase GDP growth rates?



Part 4

GROWTH AND DEVELOPMENT



Chapter 16 THE ECONOMICS OF GROWTH

INTRODUCTION

In the past century Australia has grown from an infant economy to a vigorous, productive one. This long-run growth has not occurred at a steady pace. On the contrary, it has been punctuated by periods of instability—of rising and falling unemployment and inflation. Parts 2 and 3 of this book dealt with the causes and potential cures of short-run economic instability. The business cycle, the theory of employment and fiscal and monetary policy have been the focal points of our analysis.

The task of Part 4 is to examine the issue of economic growth. In this chapter we are concerned with the both the basic theory of economic growth and the growth record of Australia. We will also analyse some of the debates over the desirability of economic growth. Chapter 17 looks at the problem of economic growth from the viewpoint of the developing countries.

LEARNING OBJECTIVES

- **Understand how growth is defined and why it is important.**
- **Discuss the sources or ingredients of growth.**
- **Describe the classical growth model and its dismal implications.**
- **Analyse how labour productivity and, therefore, living standards can be raised.**
- **Develop a formal full-employment growth model.**
- **Describe and explain the growth record of Australia.**
- **Briefly survey growth policy.**
- **Review the debate over the *desirability* of growth as an economic goal.**
- **Examine whether continued economic growth is *feasible*.**

GROWTH ECONOMICS

Growth economics: the area of economics concerned with the analysis of the patterns of long-term trends in an economy's productive capacity and the factors that influence and may alter these trends.

Employment theory—detailed along with stabilisation policy in Parts 2 and 3—is of a static or short-run character. It assumes the economy has fixed amounts of resources or inputs available and therefore is capable of producing some capacity or full-employment level of domestic output. The central question of modern employment theory is: what must be done to utilise fully the nation's existing productive capacity? The essence of our answer, of course, is that aggregate expenditures should be adjusted through fiscal and monetary measures to the full-employment level of output at which actual GDP will equal capacity or potential GDP (see Chapters 9 and 12).

In contrast, **growth economics** is concerned with the question of how to increase the economy's productive capacity or full-employment GDP. Growth economics focuses largely on the supply side; it is concerned with the factors that shift the aggregate supply curve rightwards (see Chapters 8 and 14). Whereas employment theory is couched in terms of a fixed-capacity output, the economics of growth takes a long-run perspective and seeks to uncover the forces that alter the economy's capacity to produce over time.

TWO DEFINITIONS

Economic growth: increases in real GDP or real GDP per capita that occur over the long term.

Economic growth is defined and measured in two related ways. Specifically, economic growth may be defined:

1 as the increase in real GDP that occurs over a period of time

2 as the increase in real **GDP per capita** that occurs over time.

Both definitions are useful. For example, if we are concerned with the question of military potential, the first definition is more relevant. But per capita output is clearly superior for comparisons of the economic **standard of living** between nations or regions. For example, while India's GDP in 1994 was about 17 per cent larger than Switzerland's—measured in US dollars—the latter's per capita income was over 116 times as great as India's (see Chapter 17). Our attention in this chapter is primarily on the growth of real output and income per capita. Economic growth, by either definition, is usually calculated in terms of annual percentage *rates* of growth.

IMPORTANCE OF GROWTH

Why is growth a widely held economic goal? The answer is self-evident. The growth of total output relative to population means a higher standard of living. An expanding real output means greater material abundance and implies a more satisfactory answer to the economising problem (see Chapter 2).

Our question can be answered from a slightly different perspective. A growing economy is in a superior position to meet new needs and resolve socioeconomic problems, both domestically and internationally. A growing economy, by definition, enjoys an increment in its annual real output, which it can use to satisfy existing needs more effectively or to undertake new projects. An expanding real wage or salary income makes new opportunities available to any family—a trip to Europe, a new stereo, a tertiary education for each child, and so on—without the sacrifice of other opportunities and enjoyments. Similarly, a growing economy can, for example, undertake new programs to alleviate poverty and clean up the environment without impairing existing levels of consumption, investment and public goods production. Growth lessens the

burden of scarcity. A growing economy, unlike a static one, can have its cake and eat it too. By easing the burden of scarcity—by relaxing society's production constraints—economic growth allows a nation to realise existing economic goals more fully and to undertake new output-absorbing endeavours.

ARITHMETIC OF GROWTH

People sometimes wonder why economists get so excited about seemingly minuscule changes in the rate of growth. Does it really matter very much whether our economy grows at 4 per cent or 3 per cent?

It matters a great deal! If Australia has a current GDP over $593 815 million, the difference between a 3 and a 4 per cent growth rate is $5938 million worth of output per year. For a very poor country, a 0.5 per cent change in the growth rate may well mean the difference between starvation and mere hunger.

Further, when envisioned over a period of years, an apparently small difference in the rate of growth becomes exceedingly important because of the 'miracle' of compound interest. To illustrate—suppose Alphania and Betania have identical GDPs. But Alphania begins to grow at a 4 per cent annual rate, while Betania grows at only 2 per cent. Recalling our 'rule of 70' of Chapter 5, Alphania would find that its GDP would double in only about 18 years (= 70 ÷ 4); Betania would take 35 years (= 70 ÷ 2) to accomplish the same feat. The importance of the growth rate is undeniable.

Concept highlights

- Economic growth may be defined either in terms of:
  - an expanding real domestic output (GDP)—the total value of output or production for the economy, or
  - an expanding per capita real output (GDP per capita)—indicating the economic standard of living of a country's inhabitants.
- Growth lessens the burden of scarcity and provides increases in total output.
- Greater total output per capita can be used in the resolution of domestic and international socioeconomic problems.

CAUSES OF GROWTH

What are the sources of economic growth? Basically, there are *six strategic ingredients* in the *growth* of any economy. Four of these factors relate to the physical ability of an economy to grow. They are:

1. the quantity and quality of its natural resources
2. the quantity and quality of its human resources
3. the supply or stock of capital goods
4. technology.

The other two factors relate to aggregate demand and the allocation of resources. They are:

5. the demand factor
6. the efficiency factor.

SUPPLY FACTORS

The first four items in our list of strategic ingredients may be termed the **supply factors** in economic growth. These are the physical agents of greater production. It is the availability of more and better resources, including the stock of technological knowledge, that permits an economy to produce a greater real output. Therefore the two fundamental ways by which any society can increase its potential real output and income are by increasing:

1 its inputs of resources

2 the quality, or productivity, of those inputs.

LABOUR FORCE PRODUCTIVITY

Let us focus our attention on inputs of labour. By so doing we can say that our real GDP in any year depends upon the input of labour (measured in worker hours) multiplied by **labour productivity** (measured as real output per worker per hour); that is:

total output = worker hours × labour productivity.

A hypothetical illustration: assume an economy with 10 workers, each of whom works 2000 hours per year (50 weeks at 40 hours per week), so that total input of worker hours is 20 000 hours. If productivity—measured as the average real value of output per worker hour—is $5, then total output or real GDP will be $100 000 (= 20 000 × $5).

What determines the number of hours worked each year? And, more importantly, what determines labour productivity? Figure 16.1 provides us with a framework for answering these questions. The hours of labour input depend upon the size of the employed labour force and the length of the average working week. Labour force size, in turn, depends upon the size of the working-age population and labour force participation rates (the percentage of the working-age population actually in the labour force). The average working week is governed by legal and institutional considerations and by employer–union negotiation.

Productivity is determined by such factors as technological progress, the quantity of capital goods with which the workers are equipped, the quality of labour itself, and the efficiency with which the various inputs are allocated, combined and managed. Stated differently, productivity increases when the health, training, education and motivation of workers are improved, and when workers have more and better machinery and natural resources with which to work.

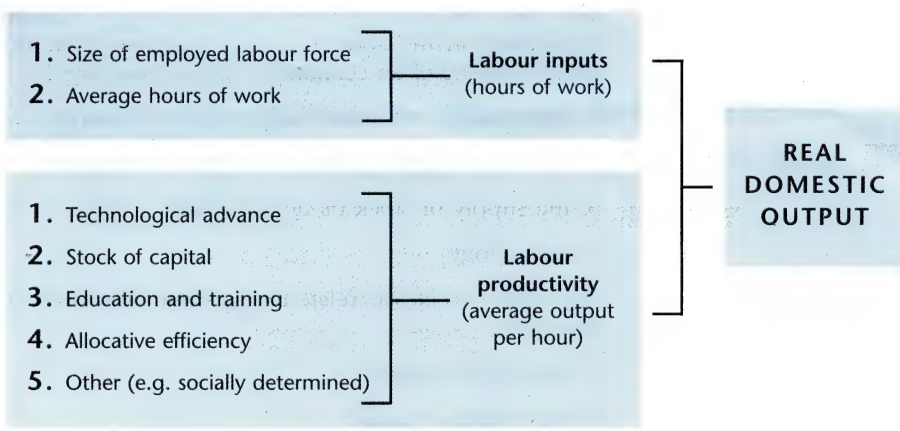


FIGURE 16.1
The determinants of real output

Real GDP can usefully be viewed as the product of the quantity of labour inputs, multiplied by labour productivity.

Global SNAPSHOT — WORLDWIDE VARIATIONS IN THE ECONOMIC STANDARD OF LIVING

The average level of economic welfare, as measured by the value of the output of goods and services per person in an economy, or GDP per capita, varies widely across nations. To allow a proper comparison of the measure across nations, we need to convert all measures to a common currency. The measures of GDP per capita presented here are based on US dollars.

	GDP per capita 1997, US$
World	**5 130**
Low- and middle-income countries in:	1 250
East Asia and Pacific	970
Europe and Central Asia	2 320
Latin America and Caribbean	3 880
Middle East and North Africa	2 060
South Asia	390
Sub-Saharan Africa	500
High-income countries	*25 700*

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. List and explain some of the reasons that may exist for the differences in GDP per capita that exist between these different regions of the world.
2. Of the factors that you have listed, which two do you think are the most important? Justify your choices.
3. How useful a measure of the standard of living is GDP per capita? What deficiencies might be present when GDP per capita is used to compare the differences in standards of living between nations? Explain.

DEMAND AND EFFICIENCY AS FACTORS

The ability to grow and the actual realisation of growth may be quite different things. Specifically, as mentioned above, there are two additional considerations for growth. First, there is a **demand factor** in growth. To realise its growing productive potential, a nation must obviously provide for the full employment of its expanding supplies of resources. This requires a growing level of aggregate demand. The ability to expand production is not a sufficient condition for the expansion of total output; also required is the actual employment of the available resources.

It is notable that the supply and demand factors in growth are related. For example, unemployment tends to retard the rate of capital accumulation and may slow expenditures for research. And, conversely, a low rate of innovation and investment can be a basic cause of unemployment.

Second, there is the **allocative factor** in growth. To achieve its productive potential, a nation must provide not only for the full employment of its resources, but also for full production *from* them; that is, the allocation of those resources must be made in such a way as to get the maximum amount of useful goods and services possible. Thus output may be increased if production is better organised and managed, and labour is reallocated from less efficient industries to more efficient industries.

GRAPHICAL ANALYSIS

The six factors underlying economic growth can be placed in proper perspective by recalling the production possibilities curve in Chapter 2, reproduced in Figure 16.2. This is a best-performance curve in that it indicates the various maximum combinations of products the economy can produce, given the quantity and quality of its natural, human and capital resources, and its stock of technological knowledge.

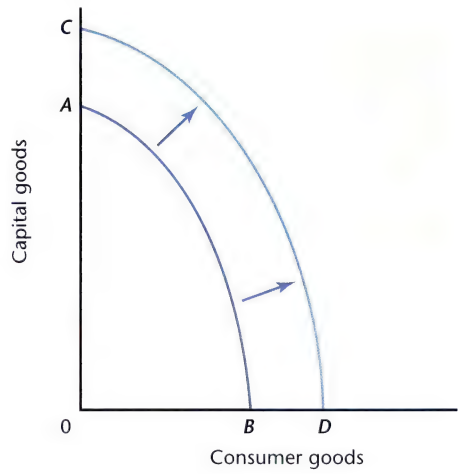


FIGURE 16.2
Economic growth and the production possibilities curve

Economic growth is indicated by an outward shift of the production possibilities curve, from *AB* to *CD*. Increases in the quantity and quality of resources and technological advance permit this shift; full employment and allocative efficiency are essential to its realisation.

An improvement in any of the supply factors will push the production possibilities curve to the right, as indicated by the shift from *AB* to *CD* in Figure 16.2. Increases in the quantity or quality of resources and technological advances push the curve to the right. But the demand and allocative factors remind us that the economy need not realise its maximum productive potential; the curve may shift to the right and leave the economy behind at some level of operation inside the curve. In particular, the economy's enhanced productive potential will not be realised unless:

1. aggregate expenditures increase sufficiently to sustain full employment
2. the additional resources are employed efficiently; that is, they make the maximum possible contribution to output.

EXAMPLE

During 1989–90 the net increase in the labour force of Australia was almost 252 800 persons. Although the recession and recovery over the period from 1990–91 to 1993–94 saw the net annual increase in the labour force average around half of this figure—it actually declined by around 4100 in 1990–91—there was significant growth as the economy recovered from recession. Increases in 1994–95 of 266 500 were recorded in the labour force, while in 1995–96 it increased by 86 200. These increments to the labour force raise the productive capacity, or potential, of the economy. But the realisation of the extra output these additional workers are capable of producing presumes they are able to find jobs, and that these jobs are in those firms and industries where their talents are fully utilised. Society does not want new labour force entrants to be unemployed. Nor does it want paediatricians working as plumbers or, more generally, workers producing goods and services that cost substantially more to produce than the incomes that they generate.



Concept highlights

- There are six strategic ingredients for economic growth to occur. Four factors relate to the supply of resources.
- The supply factors in economic growth are:
  - the quantity and quality of a nation's natural resources
  - the quantity and quality of its human resources
  - its stock of capital facilities
  - its technology.
- Two other factors—a sufficient level of aggregate expenditure and allocative efficiency—are essential if the economy is to realise its growth potential.

MODELS OF GROWTH

There are a multitude of models of economic growth and its foundations that have been used by economists to explain economic growth or its aspects. Some of these models focus on the role of trade as an engine of growth, others on the role of government in directing development and industry policy as it intervenes in the market. For simplicity we shall present two models that focus on the supply and demand aspects of economic growth. The first is the classical model that focuses on interaction between the population and the other productive resources of the economy. The second is the relationship between demand and growth in the form of aggregate expenditures. We will then present a full-employment growth model. The exploration of other elements of importance to the growth process will continue later in this chapter, as we recount and discuss Australia's growth record.

THE CLASSICAL MODEL

British 'classical' economists of the late eighteenth and early nineteenth centuries—in particular, David Ricardo and Thomas Malthus—made substantial contributions to our understanding of growth which remain relevant today. Let us survey their ideas, which focused on the interaction of two important factors:

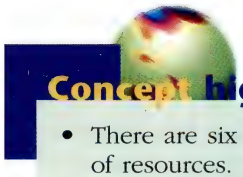
1 the law of diminishing returns

2 population growth.

LAW OF DIMINISHING RETURNS

If all of a nation's resources increased, we might expect a more or less proportionate increase in its national output; that is, if a nation's supplies of land, labour and capital all doubled, we would anticipate—in the absence of substantial economies of scale (see Chapter 9 of the companion book *Microeconomics*, 6th edition)—a doubling of total output.

But an economy may find it extremely difficult to increase *all* its resources in a balanced or proportionate manner. Land, in particular, is a relatively fixed resource. Typically, the mineral deposits and amount of arable land available to a nation can be increased only within narrow limits. What will happen to total output when inputs are increased disproportionately—that is, when property resources (land) are held constant and more labour is applied to them?



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Law of diminishing returns: as successive equal increments of one resource (e.g. labour) are added to a fixed resource (e.g. land), beyond some point the resulting increases in total output (marginal products) will diminish in size.

The answer to this question has its roots in the famous **law of diminishing returns**, which has applications both to the economy as a whole and to individual firms and industries (see Chapters 9 and 14 of the companion book *Microeconomics*, 6th edition).

The concept of diminishing returns can best be understood by performing an easy mental experiment. Imagine an economy whose property resources (land and real capital) are absolutely fixed. In particular, visualise a primitive, underdeveloped economy whose stock of capital goods is negligible and whose supply of arable land is fixed. Assume, too, that technology—the stock of technological knowledge—is fixed; this means that the quality of both capital and labour is given. Assuming its population is growing, this simple agrarian society is concerned primarily with adding labour to a fixed amount of land and a few rudimentary farm tools to produce the food and fibre needed by its population. What happens to total output as equal increments—equal doses—of labour are added to a fixed amount of property (primarily land) resources?

The law of diminishing returns indicates that as successive equal increments of one resource (labour, in this case) are added to a fixed resource (land and property), beyond some point the resulting increases in total output will diminish in size. Our law, then, says that as successive inputs of labour are added to a fixed amount of some other resource(s), the resulting marginal product will diminish beyond some point.

A qualification: note that we say 'beyond some point'. The initial increments or doses of labour may be subject to increasing returns—marginal product may rise for a time. The reason for this is that initially, with a very small labour force, property resources will be grossly underutilised. The fixed supplies of land and capital will be seriously understaffed. A very small amount of labour, combined with a very large amount of land, will result in relatively inefficient production. As equal increments or doses of labour are added to the fixed amount of land, the problem of underutilisation will be overcome and the resulting marginal product will increase for a time.

But this stage of increasing returns will inevitably reverse itself. As more and more labour is added to the fixed amount of property resources, a point will be reached where land and capital come to be overstaffed or overutilised; that is, each worker will be equipped with smaller and smaller amounts of land and capital. In our simple agrarian society, more and more workers will be farming each hectare of arable land and each worker will have fewer tools with which to work. Hence, successive equal doses of labour will result in smaller and smaller increases in total output. Diminishing returns have been encountered; the marginal product of successive doses of labour diminishes and may in the extreme eventually become negative!

OPTIMUM POPULATION

That particular population size at which real output or income per person is at a maximum is called the **optimum population** for society. The optimum population is that population which, given the economy's property resources and technology, will yield the greatest income per person. This concept reinforces an earlier point—population growth may be a mixed blessing as far as growth is concerned.

MALTHUS AND MISERY

The concept of diminishing returns correctly suggests that the relationship between the size of a country's population (labour force) and its property

resources is highly relevant in determining both its total output and its output per person, or standard of living. Indeed, this fact was perceived by the English economist Thomas R. Malthus at the close of the eighteenth century and enunciated in his famous *Essay on the Principle of Population* (1798). Malthus's explicit purpose was 'to account for much of that poverty and misery observable among the lower classes of every nation', and his explanation of this misery was rooted firmly in the law of diminishing returns.

Malthus's thesis: given diminishing returns, persistent and substantial population growth will force and maintain the standard of living close to the subsistence level.

The essence of **Malthus's thesis** is quite simple—the population of a nation tends to outrun its capacity to produce the food and fibre needed to sustain itself. Population tends to increase at a constant geometric rate (2, 4, 8, 16, 32, 64, 128, 256 and so on). But the output of food, on the other hand, increases at best only at a constant arithmetic rate (1, 2, 3, 4, 5, 6 and so on). Given these different rates of increase, population will in time inevitably press upon the food supply and the results will be subsistence living levels, misery and, in the extreme, starvation. But why will the food supply not increase at a more rapid rate? Because of diminishing returns. As the growing population puts more and more labourers to work on a fixed amount of arable land, each worker is combined with less and less land, so worker productivity declines.

We have just noted that a society's output per worker is its income per worker. A diminishing average product therefore means a falling standard of living. In short, the pressure of an expanding population and labour force on fixed land resources invokes the law of diminishing returns. Total output increases less than proportionately to population, so the standard of living necessarily declines.

In the eighteenth century, the result was the widespread misery and poverty that Malthus readily observed. We might summarise Malthus's position by saying that, given the reality of diminishing returns, persistent and substantial population growth will keep the level of living perilously close to the bare subsistence level. Only the gloomy team of disease, malnutrition and famine will bring population growth to a halt.

We are all well aware that the human race has been undergoing an extraordinary expansion in numbers. The magnitude of this unparalleled population explosion is portrayed vividly in Figure 16.3. World population growth in just the last two centuries has been three times larger than the estimated cumulated expansion of population during all the previous millennia of human existence!

Given this incredible growth of population and its projected continuance, and given the hard fact that only a finite amount of land exists on our planet, it is highly relevant to inquire as to the extent to which Malthus's gloomy forecast has (or will) come to pass. Is the Malthusian prediction being realised in any of today's nations?

While the Malthusian model has little or no relevance for the industrially advanced nations, it does apply to many of the less developed nations of the world (see Chapter 17). In recent years population pressures in sub-Saharan Africa have led to overplanting and overgrazing of land. The resulting soil erosion, accompanied by drought, has caused widespread famine. Indeed, many of the nations of Africa, South America and Asia are finding it extremely difficult to raise their living standards, because rapid population growth means that year after year there are more mouths to feed and more bodies to clothe and shelter. While Egypt's Aswan Dam makes a substantial contribution to the nation's output of food, the growth in population that occurred during the period of construction has had the effect of leaving per capita food production substantially unchanged!

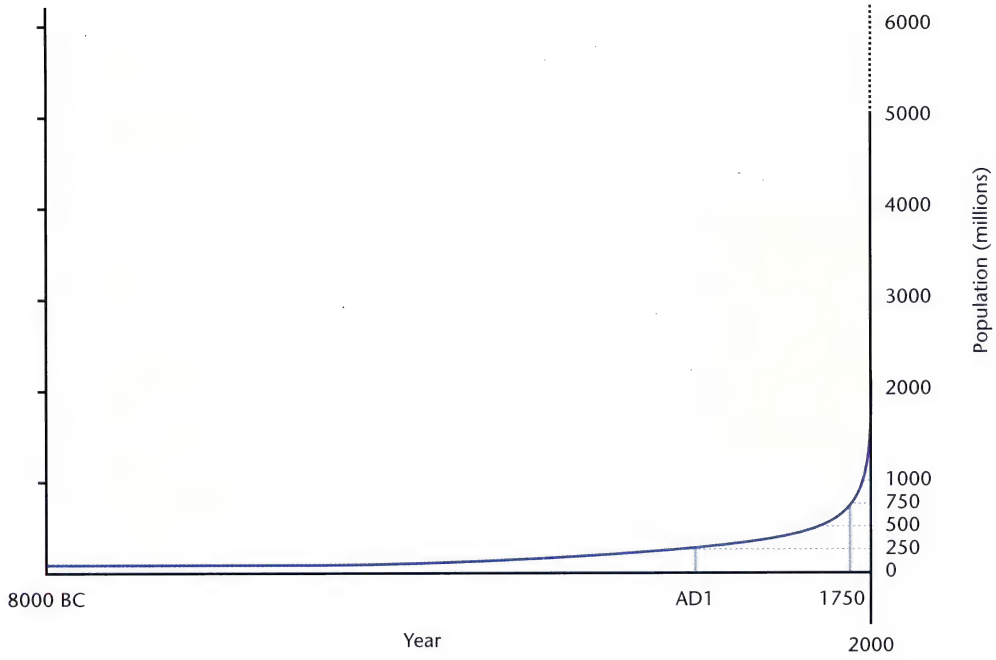


FIGURE 16.3
The long-run trend of world population growth

A dramatic acceleration of world population growth has been experienced in modern times.

SOURCE: John D. Durand, 'A Long-range View of World Population Growth', The Annals, *January 1967, p. 3.*

IMPROVING LABOUR PRODUCTIVITY

In contrast, the 'advanced' nations of the world—the United States, Canada, the countries of Western Europe, Australia, New Zealand and Japan—enjoy high and rising standards of living despite considerable population growth. The question is: why the differences? Why is there poverty in South Asia, yet plenty in South Australia? From a policy standpoint, how can a nation improve its standard of living?

The answer is implicit in classical growth theory—reduce the size of the population and labour force or increase the productivity of labour, or do both! If the economy is at the subsistence income level, the standard of living can be increased by reducing the size of the labour force and thereby moving towards the optimum population level. But population growth can be difficult to control through government policy, as many of the less developed countries have discovered. In fact, virtually all nations are experiencing significant population growth. The second option—increasing *labour productivity*—is the one typically pursued through public policy.

But how can labour productivity be increased? A moment's reflection suggests the answer: by altering the assumptions upon which the law of diminishing returns is based. If we provide more capital, an improved technology and a better labour force, we may offset or forestall diminishing returns. Why? Because each level of labour input is now equipped with more capital and better technological know-how, and the labour force itself is superior. For all these reasons, any given number of workers will produce a larger total output, and hence a larger output per worker.

A little reflection reveals that, for any nation with a growing population and labour force, we can think of the course of its standard of living as the net result of two opposed forces. On the one hand, diminishing returns cause the application of successive inputs of labour to result eventually in smaller and

smaller increases in total product, a declining average product and a falling standard of living. On the other hand, we have the 'forces of growth'—increases in the stock of capital, technological progress and qualitative improvements in the labour force and management—tending to offset diminishing returns by violating the very assumptions or conditions upon which the functioning of the law depends.

Now, and at the hazard of oversimplification, what has happened in the less developed countries is that the forces of growth have been absent or, at best, present in only modest degrees, so that diminishing returns have prevailed. And, as Malthus envisioned, population has indeed tended to press upon the food supply, to the end that living standards have remained pitifully low (see Table 17.1).

AGGREGATE EXPENDITURES AND GROWTH

Classical theory focuses on the supply side of economic growth—that is, on those factors that determine the productive capacity of the economy. We now want to consider the demand side of economic growth within the context of employment theory.

KEEPING PACE WITH CAPACITY

The essence of the problem is that, in an economy whose productive capacity is expanding, the full-employment GDP will obviously be increasing over time. As noted earlier, the realisation or achievement of that desired output clearly depends upon an expanding level of aggregate expenditure. Figure 16.4 is based upon the simple aggregate expenditures model (Chapters 6 and 7) where we assume that the full-employment GDP in year 1 for a closed economy is $490 billion and that, fortunately, the aggregate expenditure schedule is at $(C + I + G)_1$, so that full employment is being realised. But now, in a growth context, we must acknowledge that the economy's productive capacity—its full-employment GDP—will be increasing through time; that is, increases in the quantity and quality of resources and technological advances will make it possible for the economy to produce a larger full-employment GDP in year 2.

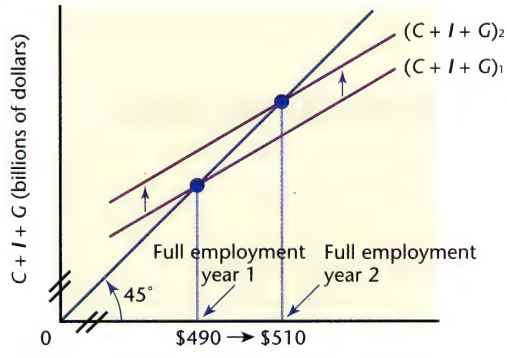


FIGURE 16.4
Aggregate expenditure and full employment in a growing economy

As the result of increases in the quantity and quality of resources and technological progress, the full-employment GDP will increase over time, for example from $490 in year 1 to $510 in year 2. To utilise this expanded productive capacity, aggregate expenditure must increase from $(C + I + G)_1$ to $(C + I + G)_2$.

Suppose these supply factors in growth permit a 4 per cent increase in real output so that the full-employment GDP is approximately $510 billion in year 2. The obvious point is that, in order for this enhanced productive potential to be realised, the aggregate expenditure schedule must expand at a rate sufficient to maintain full employment. In this instance, aggregate spending must shift upwards to $(C + I + G)_2$. If aggregate spending grows less or not at all, the consequence will be underutilised productive capacity, unemployed resources and a retarded growth rate. On the other hand, if the aggregate expenditure schedule shifts above $(C + I + G)_2$, the economy will realise its increased capacity to produce but it will also incur inflation. Note that fiscal and monetary policies must now be manipulated to hit a moving target!

Asian FOCUS

LABOUR FORCE AND POPULATION GROWTH IN ASIA

Population growth and the growth in the labour force differ widely across our region of the world. Although obviously related, growth in the size of the population and growth in the labour force need not match, as will be apparent from the following table.

Country	Average annual rate of growth 1992–1998 (% p.a.) Population	Labour force
Australia	1.2	1.5
China, mainland	1.0	1.3
China, Hong Kong SAR	2.4	2.7
India	1.7	2.0
Indonesia	1.6	2.7
Japan	0.3	0.6
Malaysia	2.5	3.3
Philippines	2.3	2.7
Singapore	1.9	1.6
South Korea	1.0	2.7
Thailand	1.1	1.6
Vietnam	1.7	1.9

SOURCE: Asia Fact File, 'On the Rise', Business Asia, *31 March 2000.*

Questions

1 Why is it that the rate of population growth is usually exceeded by the growth rate in the labour force? Explain the factors that may be behind this.
2 Identify the country that provides an exception to the general relationship discussed in question 1? Provide possible reasons for the occurrence of this exception.
3 Is it possible for the rate of growth in the labour force to continue to exceed that of the rate of population growth over the long term? Explain why or why not.

FULL-EMPLOYMENT GROWTH MODEL

More sophisticated growth models focus attention on the investment component of aggregate spending. Figure 16.4 stresses the **income-creating aspect of investment**; that is, investment is regarded solely as a generator of output, income and employment. But we must now recognise that it is net investment that has a **capacity-creating aspect**. Net investment represents an addition to the nation's stock of capital goods, and this enhances the productive capacity of the economy (see Chapter 4). An economy that engages in net investment in year 1 is expanding its 'national factory' and will have the capacity to produce a larger full-employment GDP in year 2.

ASSUMPTIONS

Table 16.1 embodies a simple macroeconomic growth model that highlights the capacity-creating role of (net) investment and allows us to isolate certain crucial

factors that determine an economy's full-employment growth rate. We begin by making several simplifying assumptions.

Assume, first, a private closed economy where aggregate expenditure is composed of only consumption and investment. Suppose, too, that depreciation in our simple model is zero; net investment equals gross investment (I). Third, assume that the economy is currently (year 1) in equilibrium at the full-employment GDP of $100 billion. Fourth, assume that the average propensity to save (APS) is 0.20, and is constant at all levels of income. Now, noting that saving is $20 billion (0.20 × $100 billion), we know that the level of investment required to achieve full employment is also $20 billion ($S = I$). In short, the year 1 figures of Table 16.1 represent a very simple income-determination model as in Chapter 6.

Table 16.1 Full-employment growth rates (hypothetical data in billions of dollars)

(1) Year	(2) Full-employment GDP ($ billion)	(3) Full-employment level of saving ($ billion)	(4) Full-employment level of investment ($ billion)	(5) Increase in full-employment GDP ($ billion)
1	100.00	20.00	20.00	
2	105.00	21.00	21.00	5.00 (= 20 ÷ 4)
3	110.25	22.05	22.05	5.25 (= 21 ÷ 4)
4	115.76	23.15	23.15	5.51 (= 22.05 ÷ 4)
5	———	———	———	———

CAPITAL–OUTPUT RATIO

Capital–output ratio: the ratio or relationship between net increases in the size and value of the capital stock (net investment) and sustainable increases in real GDP (capacity output).

But now we must introduce the capacity-creating aspect of net investment and observe that this economy will be able to produce a larger full-employment GDP in year 2. The question is: how much larger? This depends on the **capital–output ratio**, that is, the ratio or relationship between net investment and the resulting increase in productive or output capacity of the economy. Let us suppose this ratio is 4:1 or, more simply, 4. This means that every $4 of net investment in year 1 makes the economy capable of producing $1 of additional output in year 2 and succeeding years. Knowing that it takes $4 worth of net investment to increase productive capacity by $1, we can simply divide year 1's $20 billion of net investment by the capital–output ratio of 4 to find the increase in the economy's full-employment GDP as the result of year 1's investment. In column 5 of Table 16.1 we find that the answer is $5 billion; full-employment output in year 2 is $105 billion, compared with year 1's $100 billion.

Succeeding rows in Table 16.1 merely repeat this procedure. We find that in year 2 the full-employment level of saving will be $21 billion (= $105 billion × 0.20). It is assumed in column 4 that net investment is just sufficient to offset this saving leakage so that full employment is again realised. Here is the same question again: by how much will year 2's net investment increase productive capacity in year 3? Again, in column 5 we get the answer by dividing net investment by the capital–output ratio. Year 2's net investment will permit the economy to produce an extra $5.25 billion ($21 billion ÷ 4) in year 3. You are urged to follow through on this procedure for years 3 and 4 and to calculate the omitted figures for year 5.

THE GROWTH RATE

It is important to stress that Table 16.1 traces through the growth scenario of an economy where aggregate spending grows by just that amount necessary to sustain full employment through time. The figures of the table therefore reflect the **full-employment growth rate** for this economy. Inspection of column 2 indicates that the full-employment GDP is growing by 5 per cent per year. Similarly, by inspection of column 4 we find that the growth in net investment that is required to sustain full employment is also 5 per cent. Further, although the growth rates of GDP and net investment are constant, this obviously means that the absolute increases in GDP and net investment are larger and larger each year.

Let us now generalise: Column 5 of Table 16.1 tells us that each year GDP increases by the proportion of the GDP that is saved and invested (determined by the APS) *divided* by the capital–output ratio. Hence, we can say that:

$$\text{full employment growth rate} = \frac{\text{average propensity to save}}{\text{capital–output ratio}}$$

For the illustrative data of Table 16.1:

$$5\% \text{ or } 0.05 = \frac{0.20}{4}$$

An alteration in the basic data of our model—any change in the APS or the capital–output ratio—will change the full-employment growth rate. Specifically, from our formula it is clear that, given the APS, a decline in the capital–output ratio will increase the growth rate. For example, with an APS of 0.20, a decline in the capital–output ratio from 4 to 2 will increase the growth rate from 5 to 10 per cent.

On reflection this is not at all surprising—a *lower* capital–output ratio implies that the productivity of capital or investment goods has increased; that is, when the capital–output ratio declines from 4 to 2, it means that now, because of, say, technological progress, only one-half as many additional capital goods are required to increase GDP by $1 as were necessary before. Similarly, given the capital–output ratio, an increase in the APS will increase the full-employment growth rate. Given our capital–output ratio of 4, an increase in the APS to, say, 0.40 would increase the economy's full-employment growth rate from 5 to 10 per cent. The rationale for this generalisation is rooted in our analysis of goods for the present and goods for the future in Chapter 2; other things being equal, an economy that saves and invests a larger proportion of its total output will grow more rapidly.



Concept highlights

- The classical growth model is based upon two principles: diminishing returns, and population growth.
- The principle of diminishing returns exercises a constraint on growth where one or more resources are fixed in supply. This law tells us that, with a given technology, the addition of successive units of one resource (labour) to fixed amounts of other resources (land and capital) will ultimately result in smaller and smaller increases in total output. This means that the average output or productivity per worker will ultimately diminish as more and more labour is added.
- Thomas Malthus used the law of diminishing returns 200 years ago to explain the widespread poverty that then existed. In particular, he argued that rapid population growth, coupled with diminishing returns in agricultural production, was tending to keep real income per capita at the subsistence level.

- In the industrialised nations technological progress, increases in the stock of capital and improvements in the quality of labour and management have had the effect of offsetting diminishing returns by increasing the productivity of labour. This has allowed an expansion of the standard of living significantly in excess of that related to subsistence levels.
- An expanding productive potential will not be achieved unless aggregate expenditures expand at an appropriate rate, consistent with increases in the supply and productivity of society's economic resources.
- Growth models emphasise the capacity-creating aspect of net investment, while acknowledging its income-creating aspects; the role of saving in releasing resources to fund growth; and the importance of the capital–output ratio, which determines the sustainable increases in GDP associated with net increases in the size of the capital stock.
- The full-employment growth model demonstrates that the economy's full-employment growth rate can be calculated by dividing the average propensity to save (APS) by the capital–output ratio.
- The APS and the growth rate are directly related; the capital–output ratio and the growth rate are inversely related.

GROWTH RECORD OF AUSTRALIA

Table 16.2 gives us a rough idea of economic growth in Australia over the last four and a half decades, as viewed through our two definitions of growth. Column 2 summarises the economy's growth as measured by increases in real GDP. Although not steady, the growth of real GDP has been quite remarkable. Real GDP has increased by a factor of approximately 6.2 during this period. But our population has also grown significantly. Hence, using our second definition of growth, we find in column 3 that real per capita GDP has increased by around 2.8 times over the same period.

What about our *rate* of growth over the longer term? The data in Table 16.3 suggest that the growth rate of Australia's real GDP over the 120-year period to 1989 was of the order of 3.3 per cent per year, while real GDP per capita grew at about 1.2 per cent per year.

For at least two reasons these quantitative conclusions understate the economic growth that Australian economy has actually experienced.

1 The figures of Tables 16.2 and 16.3 do not fully take into account improvements in product quality. Purely quantitative data do not provide an accurate comparison between an era of gas and kerosene lighting and one of compact disc and video-cassette players.

2 Increases in real GDP and per capita real GDP were accomplished despite sizeable increases in leisure. The 70-hour work week is a thing of the distant past. The standard work week is now about 36 hours.

On the other hand, in our discussion of the growth controversy we shall find that these measures of growth do *not* take into account adverse effects on the physical environment or on the quality of life itself.

While impressive, the Australian growth record has been somewhat less dramatic than that achieved by most other developed countries. As Table 16.3 indicates, a number of countries in Western Europe, North America and even Asia (that is, Japan) have reached comparable or superior rates of growth, especially with respect to GDP per capita.

The low rate of growth in real GDP per capita in Australia, when compared to the other developed nations in Table 16.3, deserves some comment. Essentially,

this reflects two important features of Australia's economic development. The first is that in the 1870s Australia had the highest per capita GDP in the world, 40 per cent higher than that in the United States, and 20 per cent higher than in the United Kingdom. The second is the comparatively high rate of growth of the Australian population. Although population growth through natural increase has not been high by world standards, immigration relative to the size of the population has been much higher in Australia than in any other OECD nation. (The impact of immigration will receive more attention later in this chapter.)

Table 16.2 Real GDP and per capita real GDP 1950–51 to 1998–99 (1997–98 prices)

Year	Real GDP(I) ($ million)	Real GDP(I) per capita ($)
1950–51	95 454	11 327
1955–56	114 640	12 155
1960–61	139 565	13 273
1965–66	176 482	15 217
1970–71	235 011	17 980
1975–76	279 415	20 006
1980–81	324 725	21 927
1985–86	377 150	23 718
1990–91	439 778	25 604
1995–96	520 644	28 622
1998–99	590 397	31 276

SOURCE: Reserve Bank of Australia, Australian Economic Statistics 1948–49 to 1994–95; *Australian Bureau of Statistics,* Australian Demographic Statistics, *ABS Cat. No. 3101.0; and Australian Bureau of Statistics,* Australian National Accounts: National Income, Expenditure and Product, *ABS Cat. No. 5206.0.*

Table 16.3 One hundred and twenty years of growth in real GDP and real GDP per capita in selected countries

	Growth rate of real GDP 1870–1989 (average annual compound rates)	Growth rate of real GDP per capita 1870–1989 (average annual compound rates)
Australia	3.3	1.2
Canada	3.9	2.2
United States	3.4	1.8
United Kingdom	1.9	1.8
Germany	2.8	2.0
France	2.2	1.8
Italy	2.6	2.0
Japan	3.8	2.7

SOURCE: A. Maddison, Dynamic Forces in Capitalist Development: A Long-run Comparative View, *Oxford University Press, US, 1991, Tables 3.1 and 3.2.*

SOURCES OF AUSTRALIAN GROWTH

LABOUR INPUTS

Figure 16.5 indicates that our population and labour force have both expanded over time. A fairly high birth rate, a declining death rate and heavy immigration have teamed to provide Australia with substantial population growth. The population quadrupled in the 20 years from 1850 to 1870, the year at which Figure 16.5 begins, and then doubled in size by the end of the nineteenth century. Since 1900 the population has quintupled, and stood at approximately 19 million by June 1999, over 45 times the number in 1850.

Historical declines in the length of the working week have tended to reduce labour inputs. However, largely because of the increased participation of women in the labour market and continued immigration, our civilian labour force has grown, on average, by about 150 000 a year since the 1960s.

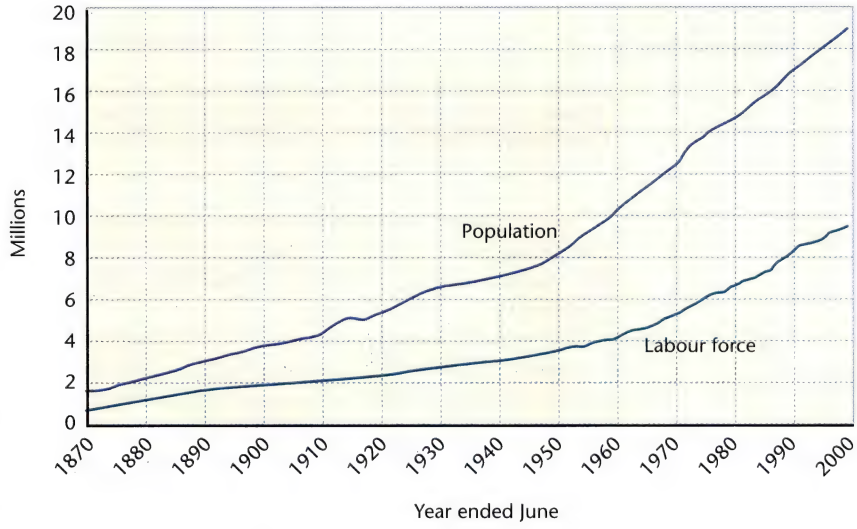


FIGURE 16.5
Population and labour force growth in Australia, 1869–70 to 1998–99

SOURCE: 1870 to 1948, A. Maddison, Dynamic Forces in Capitalist Development: A Long-run Comparative View, *Oxford University Press, US, 1991, pp. 228–29, 232–33, 266, Tables B.4, C.7. Prior to 1949–50, estimates of the labour force are interpolations based on mid-year totals in 1870, 1890, 1913, 1929, 1938 and 1950. For 1949–50 to 1989–90, Reserve Bank of Australia,* Australian Economic Statistics 1949–50 to 1994–95, *Occasional Paper No. 2, 1996. For 1990–1991 to 1998–99, Australian Bureau of Statistics,* Australian Demographic Statistics, *ABS Cat. No. 3101.0.*

Australia's immigration policies

For the post-war period, two major components of population growth can be identified—natural increase (birth rate minus death rate) and net migration. 'Net' refers to the fact that 'settler loss' is experienced; that is, some migrants eventually leave, and some Australian-born people leave permanently. Over the years the components of natural increase and net migration have been equally significant. Although in the decades of the 1930s and 1940s both immigration and fertility rates fell, in the post-war period up to, and during some periods over, 50 per cent of population growth has been explained by the impact of immigrants and their offspring (see Figure 16.6).

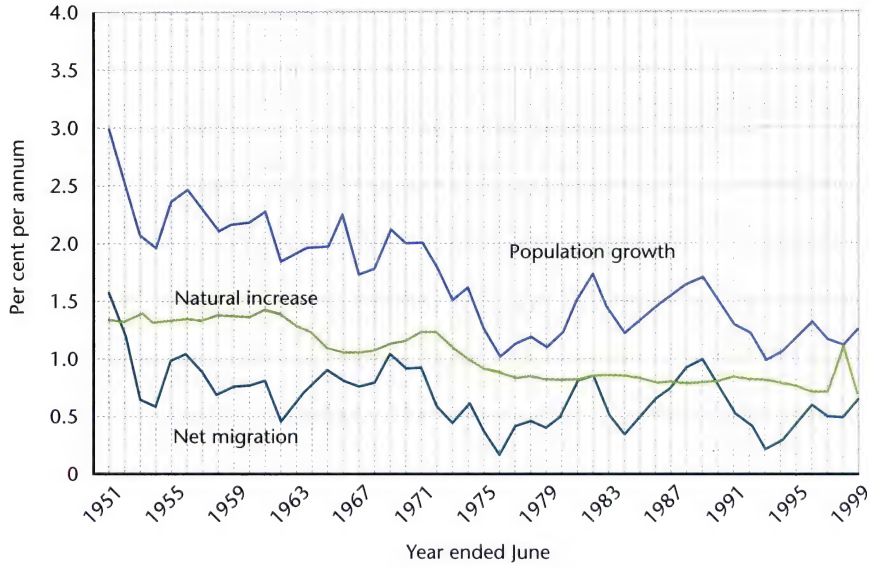


FIGURE 16.6
Sources of population growth in Australia, 1950–51 to 1998–99

Immigration has been a major source of population growth in Australia, exceeding natural increase in some periods. Changes in immigration have also been the major source of variability in the rate of growth of the Australian population.

SOURCE: 1950–51 to 1994–95, Reserve Bank of Australia, Australian Economic Statistics 1949–50 to 1994–95, *Occasional Paper No. 2, 1996. For 1995–96 to 1998–99, Australian Bureau of Statistics,* Australian Demographic Statistics, *ABS Cat. No. 3101.0, various issues.*

Immigration has been a major source of population growth in Australia, exceeding natural increase during several periods. Changes in immigration have also been the major source of variability in the rate of growth of the Australian population.

Variations from year to year in net migration have been dependent upon successive government policies and economic conditions, both domestic and overseas. Figure 16.6 shows some relevant data for the years 1950–51 to 1998–99, and some interesting patterns. The first is a temporary downturn in immigration in the early to mid-1970s. This largely reflected government policy and concerns about increasing unemployment rates in Australia. Second, during the late 1970s and throughout the 1980s, Australian government policy encouraged increasing rates of immigration. The downturns in migration in the 1982–84 and 1989–93 periods are more a reflection of lack of confidence in the Australian economy by potential migrants than any deliberate decision by government to reduce immigration.

Apart from adding to the population, the immigrant group has been responsible for various other influences—for example, keeping the age structure of the population biased towards youth, and thus concentrating the population in working age groups.

Migrants have also contributed significantly to an expansion of the labour inputs available to the economy. The importance of migration to the size of the labour force is apparent from the increasing proportion of the labour force that is 'overseas born'. In 1953–54 this was 18 per cent of the Australian labour force; by 1960–61 this figure had risen to 23 per cent, and by 1998–99 it was around 25 per cent.

PRODUCTIVITY INCREASES

Consider now the main factors that have tended to increase the productivity of labour.

Technological progress

Generally speaking, technological progress involves the discovery of new knowledge that permits the employing of given resources in new ways so as to result in a larger output. In practice, technological advance and capital formation (investment) are closely related processes; technological advance typically entails investment in new machinery and equipment. The idea that there is a more efficient way to catch a rabbit than running it down led to investment in the bow and arrow. Yet in some instances technological advance and capital accumulation are distinct. For example, modern crop-rotation practices and contour ploughing are ideas that contribute greatly to output, although they do not necessarily entail the use of more capital equipment.

What has been the rate of technological advance in modern times? Casual observation suggests that, historically, it has been both rapid and profound. Petrol and diesel engines, conveyor belts and assembly lines come to mind as obviously significant developments of the past. More recently, the lamp of technology has freed the automation genie, and with it the potential wonders of the push-button factory. Supersonic jets, the transistor and integrated circuitry, computers, containerised shipping and solar power are technological advances that were in the realm of fantasy a few generations ago.

However, in Australia we should recognise that while new technology has been *adopted* fairly rapidly, most of the technological advances themselves have been made overseas. In other words, much of Australia's technology is *imported*. What, then, of the scale of Australian technological innovation? Although it is difficult to measure unambiguously a nation's scientific output, total expenditures on **research and development** (R & D) constitute a rather widely accepted indicator of a nation's efforts to advance technologically.

The overall picture of Australia is one of increasing private and public expenditure on R & D—from 0.6 per cent of GDP in 1959 to about 1.68 per cent by 1996. However, these figures are still substantially below average expenditures in the OECD countries, where R & D expenditures averaged around 2.17 per cent of GDP during 1996. Of greater concern for Australia in the long run, perhaps, is the low share of business expenditure on R & D, which at 47.4 per cent of the total R & D expenditure in 1996 lagged behind the OECD average of 68.2 per cent. Additionally, Australia has a large share of its R & D focused on low technology and service areas, which accounted for 26.2 and 27.8 per cent of total respectively in 1996.

Stock of capital

You will recall from Table 16.1 that increases in a nation's stock of capital goods depend on the saving–investment process. This process has resulted in an historical trend towards the use of more and more real capital per worker. Private investment has seen the discovery and development of stocks of natural resources and the accumulation of plant and equipment, while public investment has also been important in providing infrastructure, such as roads, which are crucial ingredients of growth. For example, by 1995–96 the average amount of non-financial assets per employed person in Australia stood at just over $232 400.[1]

Additionally, just as immigrant workers have been important to Australian growth, so has overseas investment in private capital. Overseas investment has at times accounted for more than one-third of capital formation.

Education and training

The quality of Australian labour has increased over time as a result of health improvements and, particularly, improvements in education and training: Impressive gains in educational attainment have been made over past decades, reflecting governmental concerns—Australia should be the 'clever country'—with the skill base of the Australian labour force. An increased emphasis on schooling and continuing education has resulted, with the number of individuals holding degree qualifications increasing. For example, in 1998, 42 per cent of the population in the 15-to-64-year age bracket held post-school qualifications. Of those with post-school qualifications, 34 per cent held an award at the level of bachelor degree or above, which is just over 14 per cent of all individuals in the 15-to-64-year age bracket in 1998. Additionally, nearly 20 per cent of the population in the 15-to-64-year age bracket hold vocational qualifications, including trade skills, with nearly 57 per cent of these qualifications being classed as skilled.[2] This highly educated labour force is essential if Australia is to continue to improve its rate of sustainable economic growth throughout the early 2000s and beyond.

ALLOCATIVE EFFICIENCY AND GROWTH

The forces of growth—both the supply factors and an appropriately expanding level of aggregate spending—will call for changes in the allocation of the economy's resources over time. If these changes in resource use do not occur with reasonable speed and completeness, the economy will fail to realise fully its capacity for growth.

On the supply side, if we were to disaggregate the economy's overall growth, we would find that the productive capacities of some industries and firms are expanding rapidly while those of others are growing slowly or perhaps even contracting. Such changes obviously imply appropriate adjustments in the allocation of resources. Where, for example, do expanding industries obtain the resources that their growth requires? In part, these may be obtained from current increases in our total supplies of resources. Thus, an expanding industry may get a part of the additional labour it needs from new labour-force entrants. It may obtain the remainder of its added labour from other, declining industries. In either event, some mechanism is needed to guide new resources into their most productive uses or, as the case may be, to direct currently employed resources from areas of low-productivity employment to areas of high-productivity employment. Changes in technology (as reflected in either new productive techniques or new goods) and changes in the relative scarcities, and therefore prices, of resources that are germane to growth, call for the constant reallocation of human and property resources among alternative uses. As noted earlier, if these resource realignments do not occur with reasonable rapidity and completeness, the economy's capacity for growth may be undershot.

The need for sustained allocative efficiency also has roots on the demand side. We already know that aggregate expenditure must expand appropriately if the full-capacity output of an expanding economy is to be realised. This generalisation, however, conceals the fact that as total demand grows, its composition or structure will change. The demands for some goods are highly sensitive to increases in income. For other goods, demand might be quite insensitive to income growth. For example, the demands for potatoes, soap and wheat grow very modestly as income expands, but the demands for steak, education, jewellery and cars tend to increase sharply as income rises. In any event, extensive shifts in the allocation of resources will again be necessary.

How effectively have these realignments been negotiated in Australia? This is not an easily answered question. However, some evidence of the capacity of the economy to reallocate resources is shown in Table 16.4. Over the years, rather massive shifts have occurred in the industrial and occupational allocation of the labour force. In particular, there has been a shift of labour from agriculture to the services sector. The implication is that the Australian economy has been characterised by considerable resource mobility.

Table 16.4 Long-term changes in the composition of employment in Australia, 1870 to1999 (per cent of total employment)

Year	Agriculture	Industry	Services
1870	30.0	33.0	37.0
1950	14.6	36.5	48.9
1973	7.3	35.1	57.6
1987	5.8	26.3	67.9
1999	4.8	21.8	73.4

SOURCE: A. Maddison, Dynamic Forces in Capitalist Development: A Long-run Comparative View*: Oxford University Press, US, 1991, pp. 248–50, Table C5; and Australian Bureau of Statistics,* The Labour Force*, ABS Cat. No. 6203.0.*

This is not to deny that there have been important impediments to the resource realignments necessitated by growth and change. Specific businesses and resource suppliers caught in declining industries have often sought—sometimes with government's help via subsidies and tariffs—to impede the reallocation of resources essential to economic growth. Monopolies in both product and resource markets have retarded the reallocation of resources required for economic growth. Business monopolies may find it more profitable to suppress a newly discovered product or productive technique than to have their present capital facilities rendered obsolete before they have been fully depreciated. Some labour unions have followed similar policies, resisting new work methods that threaten to cause unemployment by making workers more productive. These artificial impediments to growth are enforced by a certain inherent immobility of resources. Geographical immobility stems from the reluctance of workers to break existing social ties, move to a new community, meet new people and put down new roots. Moreover, insofar as occupational mobility is concerned, it is no easy chore to abandon your life work at, say, middle age and assume the responsibility, costs and inconvenience of learning new skills.

OTHER FACTORS

The overall sociocultural political environment in Australia has generally been conducive to economic growth. Several interrelated factors contribute to this favourable environment. First, as opposed to many other nations, in Australia there are virtually no social or moral taboos on production and material progress. Indeed, western social philosophy has embraced the notion that material advance is an attainable and highly desirable economic goal. The inventor, the innovator and the business executive are accorded high degrees of prestige and respect. Second, our society has benefited from a willing labour force and an

ample supply of entrepreneurs. Third, our economy has been characterised by a stable political system where internal order, the right of property ownership, the legal status of enterprise and the enforcement of contracts have been fostered. Though not subject to quantification, this bundle of characteristics has undoubtedly provided an excellent foundation for economic growth.

Concept highlights

- The long-term annual growth rate of real GDP for Australia has been about 3.3 per cent; real GDP per capita has grown at about 1.2 per cent per annum.
- Australia's rate of growth in its real GDP has been high by world standards. Australia's long-term per capita growth record ranks well against that of less developed countries, but is less impressive than that of many of the other industrialised countries.
- Australia's long-term per capita growth record reflects two features: a very high per capita income at the turn of the century relative to that of other nations, and high levels of immigration relative to the size of the population.
- Australia's real GDP has grown partly because of increased inputs of labour, and primarily because of increases in the productivity of labour. A major source of increase in the supply of labour has been migration. Improvements in the quality of labour through education and training have been particularly important in Australia and will remain so into the future.
- Increases in the quantity of capital, technological progress, and improved allocative efficiency are the other important factors that have increased Australia's labour productivity. However, while Australia has substantial capital per employee, a major concern is its low investment in research and development relative to other industrialised nations.
- The realisation of the growth potential of an economy presumes that the appropriate reallocation of resources is achieved. Australia has shown considerable flexibility in this area over time, as reflected in the substantial longer-term shift of its employment structure from agriculture and industry towards the services sector.

Business IMPLICATION

GROWTH AND TAX REVENUE: ESTABLISHING THE LINK

Much of the economic growth occurring in developed countries such as Australia is resulting from an increase in the output of the services sectors of the economy. Thus, we often read about the services-based and knowledge-based economies that will be the centrepieces of economic life in the future. However, the increasing dominance of services as a part of economic life presents a problem for governments that wish to maintain their revenue base (their tax and other revenue as a share of GDP): they need to link their tax bases to services output.

In Australia, prior to the introduction of the goods and services tax (GST), it was mainly goods that were taxed via a system of wholesale and retail taxes. As of 1 July 2000, the system changed to one where the sales tax net has incorporated services as well as goods via the GST. One implication of this change for government and business is that it has provided a certain link between government tax revenues and economic activity in the future. The second implication is that the link may allow for a more stable taxation environment to be applied to business in the future.

GROWTH POLICIES

Figure 5.1 suggests the extent to which the actual performance of our economy has often fallen short of its potential over time (see Chapter 5). The result? A wasteful GDP gap and a rate of growth substantially less than that which higher levels of aggregate spending would have brought about. To illustrate, Figure 5.1 indicates the wide fluctuations that have occurred in the annual rate of growth in real GDP. The growth rate was high, at over 8 per cent, in the years 1921, 1941, 1942 and 1969, but in other years very low growth rates were experienced—for example, 0.6 and 1.4 per cent in 1978 and 1992 respectively, and even negative rates of growth in 1983 and 1991. Thus while our emphasis has been upon the theory and facts of economic growth, we should say a word or two concerning growth policy. In part, we summarise views that were treated in detail in earlier chapters.

Economists from the Keynesian schools (see Chapter 13) stress the demand side of growth. They tend to envision slow growth as the consequence of inadequate aggregate expenditures and the resulting GDP gaps. Hence, they emphasise low interest rates (easy money policy) to stimulate investment spending. Fiscal policies can be used to constrain government spending and consumption so that a high level of investment will not be inflationary. Government would also be seen to have a role in overcoming market coordination failures and wage–price rigidities that prevent aggregate demand from achieving its full-employment levels.

Cyclical unemployment can have certain harmful 'carry-over' effects upon the growth rate in subsequent years of full employment, through the adverse effects it may have on the supply factors in growth. For example, unemployment depresses investment and capital accumulation. The case is similar for investment in human capital—families simply do not have sufficient financial resources to spend on additional education and training. Further, why spend time and money on university training for teaching or engineering when these job markets are slack? Recession may also cause a shorter work week; the expansion of research budgets may be slowed by recession; union resistance to technological change may stiffen, and so on. Though it is impossible to quantify the impact of these considerations upon the growth rate, they can undoubtedly be of considerable importance. These problems are seen as reinforcing the argument for government intervention through aggregate demand management by economists of the various Keynesians schools.

In contrast, supply-side economists emphasise those factors that will increase the potential or capacity output of the economy over time. In particular, they seek to stimulate saving, investment, work effort and entrepreneurial risk-taking, primarily through tax reductions. Thus, for example, lowering or eliminating the tax on interest income, will result in an increase in the return on saving and, therefore, an increase in the amount of saving.

On the investment side of the picture, the proposal generally is to reduce or eliminate the company income tax or, more specifically, to allow generous tax credits for business investment spending. It is reasonably accurate to say that mainstream economists put more emphasis upon the short-run goal of maintaining high levels of real output by manipulating aggregate expenditures, while supply-siders take a longer-run perspective by stressing those factors that cause the full-employment or capacity output of the economy to increase.

New classical economists would see government reducing its intervention and a greater reliance on the market mechanism as a means of achieving greater growth and a better allocation of resources over time.

There are other potential growth-stimulating policies that economists of various persuasions recommend. For example, some advocate the use of an

industrial policy in which government takes a direct, active role in shaping the structure and composition of industry so as to promote growth. Thus government should take steps to hasten the expansion of high-productivity industries and to speed the movement of resources out of low-productivity industries. In Australia, such a process of structural change involves the gradual phasing out of tariff protection and other forms of subsidy provided for relatively inefficient industries. Government might also increase its expenditures on basic research and development to stimulate technological progress. Similarly, increased expenditures on training may help increase the quality and productivity of labour. Each of these policy actions will overcome market coordination failures in the economy and may reap benefits in terms of the external scale economies that may be present from greater research and development and education.

While the list of potential growth-enhancing policies is long and involved, most economists agree that it is no simple matter to increase a nation's growth rate. In terms of our full-employment growth model, the capital–output ratio and the propensity to save are not subject to easy and certain manipulation by policy measures.

Concept highlights

- Growth policy represents purposeful action on the government's part to enhance the prospects of economic growth. The form that this action should take, however, depends very much on the school of economics from which the policy's proponent comes.
- Those advocating Keynesian styles of growth policy stress low interest rates as a means of stimulating investment and maintaining a full-employment level of aggregate expenditures. Alternatively, government may be involved in the provision of those factors underlying economic growth—such as research and development and education—that may, through coordination failures and the presence of externalities, be demanded at inadequate levels.
- Supply-side economists emphasise tax cuts to enhance saving and investment, work effort, and entrepreneurial activity.
- New classical economists point to government intervention as a source of distortions that reduce growth, and therefore advocate a minimal role for government in the economy.

Business IMPLICATION

THE IMPACT OF THE KNOWLEDGE-BASED ECONOMY

The idea that most developed nations are heading towards having a knowledge-based economy is often accepted as fact. However, a number of important prerequisites need to be in place to ensure that knowledge-based economic systems can operate effectively. These prerequisites relate to people and infrastructure. To take their place in a knowledge-based system, people will usually require very high levels of both technical and academic education; if ideas matter, a familiarity with the development, use and expression of these ideas will be essential. Infrastructure, in the form of abundant computing and telecommunication equipment, is essential to the ability to store, recall, process and exchange information, especially between distant workplaces. The implication: both business and government will have to pay greater attention to their investments in education and technology if their companies and countries are to be part of the knowledge-based future.

IS GROWTH DESIRABLE?

So much for growth theory and for the facts and causes of Australian economic growth. We now turn to the task of evaluation. Two related questions arise. First, is economic growth *desirable*? Is Australia's growth record to be envied or avoided? Second, is future growth *possible*? Are there unavoidable limits upon the process of economic growth? Let us treat these two questions in order.

THE CASE AGAINST GROWTH

In recent years serious questions have been raised as to the desirability of continued economic growth for already affluent nations. A number of interrelated arguments comprise the anti-growth sentiment.

POLLUTION

Current concern with environmental deterioration is an important component of the anti-growth position. The basic point here is that industrialisation and growth result in serious problems of pollution, industrial noise and stench, ugly cities, traffic jams and many other aspects of the disamenities of modern life. These adverse social or spillover costs are held to be the consequence of the obvious fact that the production of the GDP changes the form of resources, but does not destroy them. Virtually all inputs in the productive process are eventually returned to the environment in some form of waste. The more rapid our growth and the higher our standard of living, the more waste there is for the environment to absorb—or attempt to absorb. In an already wealthy society, further growth may mean only the satisfaction of increasingly trivial wants at the cost of mounting threats to our ecological system. Anti-growth economists feel that future growth should be purposely constrained.

PROBLEM RESOLUTION?

There is little compelling evidence that economic growth has been a solution for socioeconomic problems, as its proponents claim. Anti-growth economists assert, for example, that the domestic problem of poverty—income inequality—is essentially a problem of distribution, not production. The requisites for solving the poverty problem are commitment and political courage, not further increases in output. In general, there is no compelling evidence that growth has been, or will be, a palliative for domestic problems.

HUMAN OBSOLESCENCE AND INSECURITY

Anti-growth economists contend that rapid growth—and in particular the changing technology that is the core of growth—poses new anxieties and new sources of insecurity for workers. Both high-level and low-level workers face the prospect of having their hard-earned skills and experience made obsolete by an onrushing technology, and thus becoming structurally unemployed and part of the long-term unemployed.

GROWTH AND HUMAN VALUES

Critics of growth also offer a group of related arguments that say, in effect, that while growth may permit us to 'make a living', it does not provide us with 'the good life'. We may, in fact, be producing more, but enjoying it less. Must not the loss of artistic and personal satisfaction suffered by ordinary working men and

women over two centuries of technological innovation that has changed them from artistis and craftspersons to button pushers and computer-screen readers be entered on the liability side of the balance sheet of economic growth? More specifically, it is charged that growth means industrialisation, uncreative and unsatisfying mass-production jobs, and workers who are alienated in that they have little or no control over the decisions that affect their lives.

On a more philosophical level, it is argued that a growth-oriented society confers a 'sweat-and-strain, look-to-the-future' conception of life upon its members.

IN DEFENCE OF GROWTH

But many economists defend growth as a high-priority goal, giving such arguments as follow.

LIVING STANDARDS

The primary defence of economic growth is the obvious one—that it is the basic path to material abundance and a rising standard of living. *Growth makes the dilemma of unlimited wants and scarce resources less acute.* Recalling the 'rule of 70', an increase in worker productivity of 3 per cent per year will double real output (income) per worker in about 23 years. It is true that a society cannot be relatively wealthy in terms of material goods and services without accepting the costs and disamenities that wealth inevitably entails. But the defender of growth says, in effect, 'Show me a pastoral society with an untouched environment, an abundance of leisure, and non-secular values, and I will show you an underdeveloped, poverty-ridden country'.

GROWTH AND THE ENVIRONMENT

Growth proponents feel that the connection between growth on the one hand and the environment on the other is overdrawn. To a considerable degree these are separate issues. If society should flatly abandon the goal of growth and produce a constant real output every year, it would still have to make choices about the composition of output which would affect the environment and the quality of life. Society would still have to weigh the relative merits of enjoying the natural beauty of a forest or cutting the timber for productive uses. And, if the timber were cut, society would have to decide whether it would be used for housing or billboards.

Pollution is not so much a by-product of growth as it is a shortcoming of the price system (see Chapter 17 of the companion book *Microeconomics*, 6th edition). Specifically, many parts of the environment—streams, lakes, oceans and the air—are treated as 'common property' and no charge is made for their use. Hence, our environmental resources are overused and debased. Environmental pollution is a case of spillover or external costs, and the correction of this problem entails regulatory legislation, or the imposition of special taxes (effluent charges) to remedy the price system's flaws and eliminate the misuse of the environment. There are, to be sure, serious pollution problems. But limiting growth is the wrong response—controlling pollution, not growth, is the appropriate response.

INCOME INEQUALITY

Growth is the only practical way of achieving a more equitable distribution of income in our society. It is unlikely that Australia's middle-income group will

vote to redistribute part of its own income to the poor. However, it may be willing to allocate a slightly larger share of a growing total. It follows that the basic means for improving the economic position of the poor is to move the entire distribution of income upwards through economic growth. Similarly, a no-growth policy would substantially eliminate the prospect, for the world's poor, of improving their economic position.

NON-MATERIAL CONSIDERATIONS

Defenders of growth argue that its retardation or cessation will not automatically foster humanistic goals or promote 'the good life'. Indeed, we should expect the contrary. For example, the ending of growth will not mean the elimination of production-line work; historically, growth has been accompanied by a *decline* in the fraction of the labour force so employed. Nor has growth uniformly made labour more unpleasant or hazardous. New machinery is usually less taxing and less hazardous than the machinery it replaces.

Further, why would the retardation or prohibition of growth reduce materialism or alienation? Would we not expect the results to be quite the opposite? The loudest protests against materialism are heard in those nations and from those groups who now enjoy the highest levels of material security! More positively, it is the high standards of living that growth provides that make it possible for more people to take the time for education, culture, and increased self-awareness.

THE DOOMSDAY MODELS

Out of the debate over the desirability of growth, a more sobering controversy has evolved as to whether or not continued growth is possible. The cornerstone of this controversy is the notion that resources are ultimately finite on 'spaceship earth'. Pessimists worry about both the availability of resources or *inputs* and the effects of *outputs*. Modern productive technology is heavily dependent on exhaustible natural resources; it also employs the environment—the absorptive capacity of which is limited—for waste disposal. Hence, on the one hand, there is concern that we must ultimately run out of certain kinds of natural resources—oil, coal, copper, manganese, arable land—which are obviously critical to the productive process. On the other hand, there is fear that the increased waste that inevitably results from economic growth will overwhelm the absorptive capacity of the ecological system.

Using elaborate computer models developed at MIT, the **Club of Rome**—a group of some 100 scientists, business people and academics—triggered a worldwide controversy with its conclusion that continued economic growth was impossible. According to their scenario, the growth paths of population, output and pollution are on a catastrophic collision course with production limits imposed by natural resources and the pollution-absorbing capacity of the environment.

NEW HORIZONS?

The Doomsday models sparked an ongoing controversy and, in the process, considerable criticism. Consider the following overlapping arguments.

FUN AND GAMES WITH NUMBERS?

The Club of Rome, it is contended, had *assumed* exponential or geometric growth for population and production and had *assumed* certain absolute limits

upon natural resources and technological capabilities. The 'overshoot–collapse' outcome of the resulting computer runs was merely the inevitable consequence of these assumptions.

The fundamental question is: are these assumptions—and therefore the predictions drawn from them—realistic? A different and possibly more plausible set of assumptions may yield a much happier portrayal of mankind's future. You will recall that Malthus's model is not unlike the Doomsday models in that it forecasts subsistence living levels as the result of geometric expansion of the population and arithmetic expansion of the food supply. And, while the simple projection of these assumptions does inevitably lead to the indicated conclusion, the assumptions of the model have really not been accurate for North America, Western Europe, Japan, Australia and a number of other advanced and semi-advanced nations.

ARE NATURAL RESOURCES FIXED?

A basic criticism of Doomsday models is that they assumed that the world's stock of natural resources is fixed. While true in a sense, they took the known stocks of oil or copper or manganese, applied then current and expected rates of consumption, and predicted that those resources would be exhausted in, say, 15 or 20 or 50 years. Critics argue that, in fact, only a very small fraction of the earth's surface has been explored for resources and we do not know the quantities available. Witness the important discoveries of oil in Mexico and the North Sea since the Club of Rome study was published. Indeed, later World Bank study estimates indicated that oil reserves were ten times as great as the Club of Rome estimated. We simply do not know how much oil, copper and other resources are available. But the supplies are clearly much larger than currently known reserves.

Further, if we are beginning to run out of natural resources—if they are becoming increasingly scarce—then their relative prices should be rising. But the opposite appears to be the case, as is often felt in Australia's terms of trade.

FEEDBACK MECHANISMS

Critics also contend that the Doomsday models make inadequate allowance for various **feedback mechanisms** that can function so as to prevent the occurrence of the predicted overshoot–collapse scenario.

The price system

The price system is, of course, the basic mechanism by which market economies signal, and react to, changes in relative scarcity. As reserves of, say, copper or aluminium become increasingly scarce, their prices will rise. Two responses automatically occur. On the one hand, resource users become more strongly motivated to conserve such resources either by employing substitutes (for example, plastic for copper pipes in new housing) or by developing new resource-saving production techniques. On the other hand, higher resource prices provide an incentive for resource producers to expand output by mining lower-grade ores or by recycling, both of which may have been economically unfeasible at lower prices. The point is that the price mechanism automatically induces responses that tend to alleviate resource shortages.

Behavioural patterns

Critics of the Doomsday position argue that in the long run alterations in human behaviour may be more important than the finiteness of the world's resources in

determining our material future. There is evidence, for example, that people can and will adjust behavioural patterns with respect to procreation so that we will not breed ourselves into economic oblivion. It is highly relevant for the present discussion to note that economic growth *may* be a prerequisite for the control of population growth; women with access to education and prospects of higher incomes typically bear *fewer* children; that is, the opportunity cost of children rises as growth increases average incomes. In wealthy nations high wage rates mean that more income is forgone when parents spend time rearing children. It is therefore economically rational to have fewer children. Conversely, in poor nations the opportunity cost of children is low and, indeed, a large family is regarded with hope, as a substitute for the inability of parents to accumulate savings for retirement.

Role of technology

The Doomsday pessimists may have grossly underestimated the capabilities of technological progress. Specifically, technological progress—which has been highly instrumental in thwarting Malthus's dismal predictions—may offset the predictions of the Doomsday models in a variety of ways.

Applying existing knowledge

There are potentially great benefits to be realised by the wider application of existing technology. For example, if all the land now cultivated were brought up to Australian standards of efficiency, then the world could feed a much higher population. This great potential increase in food production does not take into account the fact that, currently, only a small percentage of the earth's surface is farmed and much of the agricultural output of poor countries is now consumed by easily destroyable pests.

New resources and products

Technological progress entails a history of substituting newly discovered or newly developed resources for old ones. Many of the industrial materials used today—for example, plastics—were not even conceptually recognised a short time ago. Similarly, in our early history wood was the basic source of energy. But, aided by technological advances, society has shifted to coal, petroleum and natural gas, thereby greatly expanding our supplies of energy resources. Optimists now envision wide-scale use of solar, geothermal and nuclear power.

Equally significant is the possibility of using technology to increase the productivity of natural resources. Because, historically, labour has been the largest component of production costs, technological advances have been designed to increase the productivity of labour. But if future growth increases the relative scarcity and, therefore, the relative cost of natural resources, we can expect technological advances to become increasingly oriented towards achieving greater output per unit of natural resources. And, in fact, we can point to some remarkable resource-saving innovations.

A single communications satellite provides intercontinental telephone connections that would otherwise require thousands of tons of copper. Further, the miniaturisation and increasing power of integrated circuits have greatly enhanced our abilities to transform data, control machinery and transfer existing knowledge.

The point is that technological progress holds the potential for greatly expanding the output obtainable from a given amount of natural resource inputs.

Increasing returns to technology

Most important, and with obviously crucial implications for the previous two points, technological knowledge—the ability to solve the problem associated with the geometric expansion of population and industrial production—may also expand at a geometric rate. Indeed, the 'knowledge explosion' of the era since World War II suggests that this has been the case. If technology does, or can be made to, expand at a geometric rate, output could continue to grow as new technology is substituted for labour, capital, and non-augmentable natural resources.

If these observations are reasonably realistic, it makes sense—despite the indisputable finiteness of the earth—to think in terms of unrestrained economic progress.



Concept highlights

- Critics of economic growth argue that:
  - growth has adverse environmental effects
  - domestic and international problems are essentially matters of distribution, not production
  - growth is a major source of human obsolescence and insecurity
  - growth is frequently in conflict with certain human values.
- Proponents of growth stress that:
  - growth means a better solution to the wants–means dilemma
  - environmental problems are only loosely linked to growth
  - growth is the only feasible means by which greater income equality can be realised
  - growth is more consistent with 'the good life' than is stagnation.
- Various 'Doomsday' models of the potential for growth exist, including that of the Club of Rome. The Club of Rome's computer models portrayed an 'overshoot–collapse' scenario as the result of the collision between current growth paths of population, production, and pollution and output limits imposed by natural resources and nature's pollution-absorbing capacity.
- Critics of the Club of Rome view argue that the Doomsday models:
  - incorrectly assume natural resources are fixed
  - neglect the role of such feedback mechanisms as the price system and changes in human behaviour
  - fail to recognise the capacity of technological progress to offset the predicted scarcity of natural resources.

SUMMARY

1 Economic growth may be defined in two ways. The first is in terms of an expanding real domestic output (income), indicating changes in the size of the economy. The second is in terms of an expanding per capita real output (income). Real per capita income is the more meaningful measure as it accounts for population growth. It thus provides an indicator of increases in the economic standard of living over time.

2 Growth in real per capita incomes lessens the burden of scarcity and provides increases in total output that can be used in the resolution of domestic and international socioeconomic problems.

3 The supply factors in economic growth are (a) the quantity and quality of a nation's natural resources; (b) the quantity and quality of its human resources; (c) its stock of capital facilities; (d) its technology. However, two other factors are essential if the economy is to realise its growth potential: (e) a sufficient level of aggregate expenditure; and (f) allocative efficiency.

4 The classical growth model is based upon two principles: diminishing returns, and population growth.

5 The principle of diminishing returns exercises a constraint on growth where one or more resources are fixed in supply. This law tells us that, with a given technology, the addition of successive units of one resource (labour) to fixed amounts of other resources (land and capital) will ultimately result in smaller and smaller increases in total output. This means that the average output or productivity per worker will ultimately diminish as more and more labour is added.

6 Thomas Malthus used the law of diminishing returns 200 years ago to explain the widespread poverty that then existed. In particular, he argued that rapid population growth, coupled with diminishing returns in agricultural production, was tending to keep real income per capita at the subsistence level. Improvements in productive techniques and the associated rise in per capita incomes, he argued, would lead to an increase in the birth rate and a commensurate reduction back to subsistence of per capita incomes.

7 In the industrialised nations technological progress, increases in the stock of capital and improvements in the quality of labour and management have had the effect of offsetting diminishing returns by increasing the productivity of labour. This has allowed an expansion of the standard of living significantly in excess of that related to subsistence levels, negating Malthus's forecast of poverty and immiseration. However, aspects of Mathus's views may still be relevant for lesser developed nations.

8 Demand plays a central role in the growth process and provides a vent for the products of growth. An expanding productive potential will not be achieved or maintained unless aggregate expenditures expand at an appropriate rate—that is, a rate consistent with increases in the supply and productivity of society's economic resources.

9 Full-employment growth models emphasise the capacity-creating aspect of net investment, the role of saving in releasing resources to fund growth, and the importance of the capital–output ratio.

10 Net investment, while having income-creating aspects in the short term, provides additions to the productive base of society over the longer term. The capital–output ratio shows the level of the real capital stock required to produce an annual flow of real amounts of goods and services. The capital–output ratio thus determines the level of the sustainable increases in real GDP available from net increases in the size of the capital stock.

11 The full-employment growth model demonstrates that the economy's full-employment growth rate can be calculated by dividing the average propensity to save (APS) by the capital–output ratio as follows:

$$\text{full employment growth rate} = \frac{\text{average propensity to save}}{\text{capital–output ratio}}$$

Thus, the APS and the growth rate are directly related; the capital–output ratio and the growth rate are inversely related.

12 The long-term annual growth rate of real GDP for Australia has been about 3.3 per cent; real GDP per capita has grown at about 1.2 per cent per annum. We can thus conclude that Australia's rate of growth in its real GDP has been high by world standards. However, although Australia's long-term per capita growth record ranks well against that of less developed countries, it is less impressive than that of many other industrialised countries. This last fact reflects two features: a very high per capita income at the turn of the century relative to that of other nations—well in excess of that of the nations Australia is often compared to; and very high levels of immigration relative to the size of Australia's small population.

13 Australia's real GDP has grown partly because of increased inputs of labour, and primarily through increases in the productivity of labour. A major source of increase in Australia's supply of labour has been migration (migrants currently provide around a quarter of the labour force). Improvements in the quality of labour through education and training have also been particularly important as a source of productivity improvement in Australia and will remain so into the future.

14 Increases in the quantity of capital, technological progress, and improved allocative efficiency are the other important factors that have increased Australia's labour productivity. However, while Australia has substantial capital per employee, a major concern is its low investment in research and development relative to other industrialised nations. Thus we should note that much of Australia's technology is imported.

15 The realisation of the growth potential of an economy presumes that the appropriate reallocation of resources is achieved. Australia has shown considerable flexibility in this area over time, as reflected in the substantial longer-term shift of its employment structure from agriculture and industry towards the services sector. For example, agriculture's employment share has shrunk from around 30 per cent in 1870 to just under 5 per cent in 1999. At the same time the employment share of services has grown from 37 per cent to just over 73 per cent.

16 Those advocating Keynesian styles of growth policy stress low interest rates as a means of stimulating investment and maintaining a full-employment level of aggregate expenditures. Alternatively, government may be involved in providing those factors underlying economic growth (such as research and education) that may, through coordination failures and the presence of externalities, be demanded at inadequate levels. Keynesian schools thus demand that government intervene to improve growth prospects.

17 Supply-side economists emphasise tax cuts which provide individuals with incentives to increase their saving and investment, work effort, and levels of entrepreneurial activity.

18 New classical economists point to government intervention as a source of distortions, through taxes and ill-informed intervention in the market. Government may thus be seen as reducing potential growth and so this school of thought advocates a minimal role for government in the economy.

19 Critics of economic growth argue that:

(a) growth has adverse environmental effects

(b) domestic and international problems are essentially matters of distribution, not production

(c) growth is a major source of human obsolescence and insecurity

(d) growth is frequently in conflict with certain human values.

20 Proponents of growth stress that:

(a) growth means a better solution to the wants–means dilemma

(b) environmental problems are only loosely linked to growth

(c) growth is the only feasible means by which greater income equality can be realised

(d) growth is more consistent with 'the good life' than is stagnation.

21 Club of Rome computer models portray an 'overshoot–collapse' scenario as the result of the collision between current growth paths of population, production, and pollution and output limits imposed by natural resources and nature's pollution-absorbing capacity.

22 Critics of the Club of Rome view argue that the Doomsday models incorrectly assume natural resources are fixed, neglect the role of such feedback mechanisms as the price system and changes in human behaviour, and fail to recognise the capacity of technological progress to offset the predicted scarcity of natural resources.

KEY TERMS *and* CONCEPTS *to remember*



allocative factor	528	growth economics	524
capacity-creating aspect of investment	534	income-creating aspect of investment	534
capital–output ratio	535	labour productivity	526
Club of Rome	549	law of diminishing returns	530
demand factor	527	Malthus's thesis	531
Doomsday models	549	optimum population	530
economic growth	524	research and development (R & D)	541
feedback mechanisms	550	standard of living	524
full-employment growth rate	536	supply factors	526
GDP per capita	524		

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What is economic growth? In what two ways may we measure it? Is the distinction between these two measures of growth important? Explain.

2 Why is economic growth important? Explain why the difference between a 3.5 per cent and a 3.0 per cent annual growth rate might be of great importance to an economy.

3 What are the major causes of economic growth?

4 State the law of diminishing returns. Why are diminishing returns significant for a nation's economic growth?

5 Explain: 'Rapid population growth may both contribute to, and detract from, a nation's economic progress.'

6 How did Malthus explain the extremely low levels of income that were so common in the eighteenth century? To what extent, if any, is Malthus's explanation of poverty relevant today?

7 How can an economy with a rapidly growing population and labour force effectively offset diminishing returns?

8 What is the full-employment growth rate? How can it be calculated?

9 Briefly describe the growth record of Australia in this century. Compare the rates of growth in real GDP and real GDP per capita, explaining any differences. To what extent might these figures understate or overstate economic wellbeing? Explain.

10 To what extent have increases in our real GDP been the result of more labour inputs? Of increasing labour productivity?

11 Briefly outline the cases for and against economic growth.

12 Describe the Doomsday models. What flaws may exist in these models' assumptions? Discuss.

Problems & exercises

1 'There are both a demand and a supply side to economic growth.' Explain. Illustrate the operation of both sets of factors in terms of the production possibilities curve.

2 If the capital–output ratio is 3, what will the full-employment growth rate be when the average propensity to save (APS) is 0.10, 0.20 and 0.30? If the APS is 0.30, what will the full-employment growth rate be when the capital–output ratio is 5, 4 and 3?

3 Starting with the data in Table 16.1, assume that the APS falls to 0.1. Recalculate the full-employment level of saving, full-employment level of investment and increase in full-employment GDP. Repeat the exercise using an APS of 0.3.

4 What two generalisations can you derive from your answers to questions 2 and 3 above?



1 Compare Keynesian-style and supply-side growth policies in terms of the full-employment growth model. Which variables would each act through? Could both styles of policy be used to complement each other?

2 In addition to those discussed in the text, what other policies would you recommend to increase the rate of growth? What costs might your policies entail?

3 'If we want economic growth in a free society, we may have to accept a measure of instability.' Evaluate this statement. What implications might this have for interventionist public policy? Explain.

4 'Our prime national goal ... should be to reach a zero growth rate as soon as possible. Zero growth in people, in GDP, and in our consumption of everything. That is the only hope of attaining a stable economy—that is, of halting deterioration of the environment on which our lives depend.' Do you agree? What programs and policies might be used if we sought to decelerate our rate of growth?

5 Comment on the validity of each of the following statements:

(a) 'The price mechanism is the greatest conserver of scarce natural resources.'

(b) 'Technological advance is destined to play a more important role in economic growth in the future than it has in the past.'

(c) 'Income inequality is a matter of redistribution, not of further growth.'

(d) 'The issues of economic growth and environmental pollution are separable and distinct.'

(e) 'Nature imposes particular scarcities, not an inescapable general scarcity.'

6 What factors, areas and issues are considered important to development by the World Bank Group? Visit their website at:
http://www.worldbank.org/

Look under the 'Topics and sectors' category. List those areas that coincide with factors mentioned in this chapter. Which other issues stand out? Why might each of the areas listed be important to development and growth? Explain.



1 Australian Bureau of Statistics, *National Balance Sheet*, ABS Cat. No. 5241.0.

2 Australian Bureau of Statistics, *Transition from Education to Work, Australia*, ABS Cat. No. 6227.0.

A LAST WORD A CENTURY OF PROGRESS

Material prosperity has increased by more in the past 100 years than in all of the rest of human history. Can this staggering rate of advance continue?

The flow of reflections on the past century, prompted by the calendar and by mankind's sensible preference for round numbers, continues unabated. This week, with the publication of its new 'World Economic Outlook', even the normally austere IMF has indulged itself, with a chapter on the subject, and a supporting paper by Nicholas Crafts, of the London School of Economics. The Oxford Review of Economic Policy recently devoted a whole issue to the theme. And Brad DeLong, of the University of California at Berkeley, is about to add a book to the genre: in a neighbourly gesture, he has just circulated drafts of the first two chapters as working papers for the National Bureau of Economic Research.

Several themes come through strongly in all these commentaries. One is the striking singularity of the 20th century. The growth achieved in the past 100 years is awe-inspiring when you see it in the context of the centuries that went before.

In the 19th century, with the industrial revolution vigorously under way in Europe and America, Karl Marx could write that the capitalist class 'during its rule of scarce one hundred years, [has] created more massive and more colossal productive forces than have all preceding generations together. The subjection of nature's forces to man, machinery, the application of chemistry to industry and agriculture, steam navigation, the railways, electric telegraphs, the clearing of entire continents for cultivation ... [What] earlier century had even a presentiment that such productive forces slumbered in the lap of social labour?' Marx was right. Yet, as Mr DeLong points out, 'Compared to the pace of economic growth in the 20th century, all other centuries—even the 19th that so impressed Karl Marx—were standing still.'

As the catalogue of industrial innovation expanded remarkably during the 19th century, GDP per head grew at between 1 per cent and 1.5 per cent a year in Britain and America. In the 20th century, as the pace of innovation accelerated, incomes per head grew faster as well, at a little under 2 per cent a year. Sustained for decade after decade, growth at these rates roughly doubled American GDP per head between 1870 and 1913, then raised it almost by a factor of five between 1913 and the mid-1990s. Yet those annual growth rates look rather puny, don't they?

Allowing for growth in population of around 1 per cent a year, America's long-term growth in incomes per head is estimated today at between, say, 1.5 per cent (by old-economy stick-in-the-muds) and 3 per cent or more (by new-economy enthusiasts). One thing you learn from looking at the history of growth is that very dramatic things indeed need to be happening if growth per head is to be kept even as high as 2 per cent in the leading edge economies. The kind of economic miracle posited today by the most optimistic new-paradigmists implicitly regards current innovations in networked computers and telecommunications as not merely on a par with the greatest breakthroughs of the past two centuries, but as greater and more far-reaching.

Which is by no means to say that the new-paradigmists must be wrong. For the most part, the authors of these commentaries are sceptical: it would be difficult for economic historians (reluctant even to speculate except on the basis of decades of data) to be anything else. Just as Marx failed to envisage progress faster than he had witnessed in his own time, so today's new-economy sceptics may have fallen victim to a failure of imagination. What history does teach, though, is that 'old-economy' growth rates are not 'normal' in any long-term historical sense: they are already exceptional. The new-paradigmists are arguing that a new economic miracle has been superimposed on the one that was already going on. While not necessarily false, that is a very much bolder claim than most of its advocates appear to understand.

A second main theme concerns inequality. The gap between the richest and the poorest countries has widened dramatically during the past century. This is partly because the richest countries have been rapidly getting richer, but also because many of the poorest countries have been getting poorer. Mr Crafts points out that incomes per head in Mozambique fell from roughly $1000 a year in 1950 to roughly $850 in 1990, whereas in America they went up from nearly $10 000 to nearly $24 000 (all at 1990 prices). Incomes in Mozambique in 1990 were lower in real terms than incomes anywhere in Europe (east or west, including Russia) in 1870.

The picture is a bit less bleak, as Mr Crafts points out, if you consider broader measures, such as the Human Development Index (HDI), a statistic proposed by the United Nations Development Programme to capture the escape from poverty, and which includes data on education and health as well as incomes. Using this yardstick, Mozambique in the 1990s is better off than some parts of Europe were in 1870—admittedly, a reminder of how far Europe has come as much as any tribute to progress in Mozambique. And according to the HDI, global inequality has fallen sharply since 1950.

Policy matters a lot, the authors find, a point particularly stressed by Mr Crafts. The poorest countries can hope to catch up if they establish the basic economic institutions (starting with property rights and the rule of law) and do lots of other things right. They are not bound by the leading-country limit, wherever that may lie. East Asia, its recent troubles notwithstanding, has shown what can be done. On the other hand, history suggests that catching-up is more than a matter of merely avoiding mistakes. Getting everything right at once, and adapting as circumstances change, is as difficult for the laggards as it is for the leaders to keep pushing that ceiling.

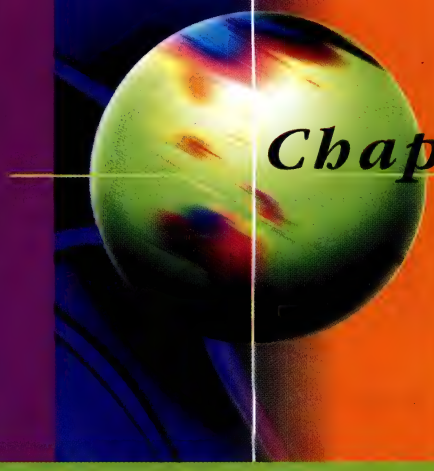
SOURCE: Economist, *15 April 2000.*

Questions

1 What two main themes does the article suggest emerge from analysis of economic growth over the last 100 years? List the main features associated with each of these themes.

2 What implications does the article suggest an analysis of long-term growth records has for the prospects of the 'new economy' to deliver growth in GDP per capita above that experienced over the last 100 years? Explain.

3 What basics does the article suggest are required for the world's poorest countries to start on the road to growth and high incomes? Do you agree that these items are of central importance? Justify your answer.



Chapter 17 GROWTH AND THE LESS DEVELOPED COUNTRIES

INTRODUCTION

It is exceedingly difficult for the average Australian, whose per capita income in 1997 was around $29 800 per year, to grasp the hard fact that around 35 per cent of the world's population lives in countries where, at the same time, per capita incomes averaged $475, with some being as low as $150. These people—making up many of the world's poor—persistently live at, or perilously close to, the subsistence level.

Ironically, most Australians are too preoccupied with problems associated with affluence—pollution, rapid urban growth, the monotony and alienation that often accompany employment, and so on—to acknowledge the abject poverty that characterises much of our planet. But, in fact, hunger, squalor and disease prevail in most of the less developed nations of the world, and in pockets within the high-income industrially advanced countries—including Australia.

LEARNING OBJECTIVES

- **Identify the less developed countries (LDCs) and their characteristics.**
- **Understand why these developing economies have achieved lower levels of development and income.**
- **Discuss policies and strategies by which the less developed countries might achieve more rapid growth.**

UNDERSTANDING UNDERDEVELOPMENT

Before we can discuss some of the possible solutions to the problems of the **less developed**—or developing—**countries** (**LDCs**) we must determine which of the world's nations may be classified as LDCs and identify any common factors that may be associated with this lack of economic development. This will also allow us to determine those countries that may be classified as **industrially advanced**—or high-income—**countries** (**IACs**).

LOW PER CAPITA INCOME

Less developed countries (LDCs): those of the world's nations that have low per capita incomes; that is, they are less developed in their ability to provide incomes and economic consumption for their population.

Industrially advanced countries (IACs): those of the world's nations with a high income per capita.

The LDCs of the world bear a common brand: poverty—low per capita incomes as compared with the IACs such as the United States, Japan, Singapore, New Zealand and Australia. Of course, where we draw the line between 'developed' and 'developing' is an arbitrary matter. Nevertheless, in Table 17.1 we can roughly envision three classifications—high-income or industrially advanced nations, middle-income developing nations, and low-income developing nations.

Looking at the data in Table 17.1, we might tag those nations with per capita incomes of US$9655 or more as developed, or high-income, nations. Included here, primarily, are the United States, Canada, Australia, New Zealand, most countries of Western Europe, Japan and Israel. There are also oil-rich countries that have high incomes, such as the United Arab Emirates, although this country is not 'developed' in the sense of being highly industrialised. Not surprisingly, given their rapid growth rates over the last 25 years, we find that Hong Kong and Singapore are also high-income economies.

Table 17.1 Per capita GNP, 1997, and average annual growth rate, 1965–97, by income category and region

Region	Per capita GNP 1997 (US$)	Average annual growth rate 1965–97 (% p.a.)
Low income	*350*	*1.4*
Middle income	*1 890*	*2.2*
Lower-middle income	1 230	3.0
Upper-middle income	4 540	1.5
Low and middle income	*1 250*	*1.9*
East Asia and Pacific	970	5.4
Europe and Central Asia	2 310	..
Latin America and Caribbean	3 940	1.3
Middle East and North Africa	2 070	0.1
South Asia	380	2.3
Sub-Saharan Africa	510	−0.2
High income	*25 890*	*2.3*
Europe EMU	23 450	..
World	**5 180**	**1.4**

.. Indicates that data were not provided.

SOURCE: World Bank, 1999 World Development Indicators.

Next come the middle-income developing economies, whose per capita incomes vary from US$786 to US$9655 per year. This heterogeneous group is largely composed of Central and South American countries, Eastern European nations, the Arab republics, and some of the nations in South-East Asia. Many countries from the former USSR, such as the Russian Federation, also appear in this group. The rest of the world—including much of Asia, Africa and the Indian subcontinent—bears the designation 'low-income developing nations'.

DIMENSIONS OF INEQUALITY

The vast income disparities between the IACs and the LDCs and the way these have changed over the last two decades are dramatised by the data in Table 17.2. Here the world is divided into two groups of nations:

1 the IACs, dominated by North America, the European Union (Western Europe) and Japan

2 the LDCs—the low-income and middle-income countries.

Note that the IACs, with 16 per cent of the world population, generated about 80 per cent of world output in 1997! In the same year the developing economies, encompassing 84 per cent of the world's population, generated only about 20 per cent of world output. At the same time South Asia, with about 22 per cent of the world's population, produced about 1.6 per cent of the world's output.

Table 17.2 World population and GNP shares of the IACs and LDCs (per cent of world totals), 1970–1997

Year	Industrially advanced countries		Less developed countries	
	Share of world population	Share of world output	Share of world population	Share of world output
1970	20	78	80	22
1980	18	75	82	25
1990	15	80	85	20
1997	16	80	84	20

SOURCE: World Bank, 1999 World Development Indicators.

It is important to note that the income gap between the richest and poorest nations has continued to widen over time. This reflects two factors. First, the per capita GDPs of the low-income LDCs were growing at an average rate of only 1.4 per cent per year during 1965–97, while the IACs' GDPs grew at 2.3 per cent. Second, the income base in the IACs was initially much higher at the start of the period.

An example will clarify this point. If per capita income is $400 a year, a 3 per cent growth rate means a $12 increase in income. Where per capita income is $4000 per year, the same 3 per cent growth rate translates into a $120 increase in income. The absolute income gap will have increased from $3600 (= $4000 − $400) to $3708 (= $4120 − $412).

Note that the apparent small gains in income share made by LDCs during the 1970s (Table 17.2) predominantly reflected the increases in oil prices engineered

by OPEC during this period. Additionally, growth did not occur in all LDCs between 1965 and 1997, with Sub-Saharan Africa actually suffering an average annual growth rate of −0.2 per cent. Incomes in this region actually declined over this period!

A MIXED BAG

We must be aware that the LDCs comprise a highly diverse group of countries. Some possess oil and other valuable mineral deposits; others do not. Many face severe problems stemming from rapid population growth; a few rely on foreign workers to ease labour shortages. Some enjoy political and social stability; others are in almost constant turmoil. Some are highly constrained by custom and tradition; others are less so. Given these and other differences, it is not surprising to find that some LDCs have achieved impressive economic progress. South Korea and China are a few examples. Others have made minuscule progress or no progress at all. Note in Table 17.1 that some regions had per capita GDP that grew by less than 2 per cent per annum from 1965 onwards.



Concept highlights

- With respect to development, the central feature of the world's economies is the disparity in both incomes per capita and growth rates in income per capita that exists between nations.
- We can divide nations according to their incomes into industrially advanced countries (IACs) and less developed countries (LDCs).
- Most nations of the world are developing—or less developed—nations. While some have achieved fairly rapid growth, others have achieved little or none at all.
- An outstanding feature evident in our study of income disparities between IACs and LDCs is that 80 per cent of the world's output is produced by only 16 per cent of the world's population.

IMPLICATIONS

Our statistics both reveal and conceal. The human implications of the poverty that characterises so much of our planet merit emphasis:

> *... let us examine a typical 'extended' family in rural Asia. The Asian household is likely to comprise ten or more people, including parents, five to seven children, two grandparents, and some aunts and uncles. They have a combined annual income, both in money and in 'kind' (i.e. they consume a share of the food they grow), of from $250 to $300. Together they live in a poorly constructed one-room house as tenant farmers on a large agricultural estate owned by an absentee landlord who lives in the nearby city. The father, mother, uncle, and the older children must work all day on the land. None of the adults can read or write; of the five school-age children only one attends school regularly; and he cannot expect to proceed beyond three or four years of primary education. There is only one meal a day; it rarely changes and it is rarely sufficient to alleviate the children's constant hunger pains. The house has no electricity, sanitation, or fresh water supply. There is much sickness, but qualified doctors and medical practitioners are far away in the cities attending to the needs of wealthier families. The work is hard, the sun is hot and aspirations for a better life are constantly being snuffed out. In this part of the world the only relief from the daily struggle for physical survival lies in the spiritual traditions of the people.*[1]

In Table 17.3, various socioeconomic indicators for selected developing countries are contrasted with those for the United States, Australia and Japan. These data clearly verify the major points stressed in the above quotation.

Table 17.3 Selected socioeconomic indicators of development

Country	Per capita GNP, 1997 (US$)	Infant mortality per 1000 live births, 1997	Safe water (% of population with access) 1996	Net primary enrolment ratio for females (% of relevant age group) 1996
Japan	38 160	4	96	103
United States	29 080	9	73	95
Australia	20 650	5	99	95
Brazil	4 790	58	..	70
China	860	32	102	83
India	370	88	..	85
Ethiopia	110	107	18	26

.. Indicates that data were not provided.

SOURCE: World Bank, 1999 World Development Indicators.

VIEWPOINT OF THE LDCS

Many people in the LDCs are not resigned to their fate. Far from it. Most seek, and feel they have a right to, a better life. As they see it, poverty is not inescapable.

Two recent developments—one economic and the other political—have fanned the desire of the LDCs for material and social betterment:

1 As noted, the per capita income gap between the economically advanced economies and the developing economies has not merely persisted, but has widened. Among nations, the rich have been getting richer and the poor have been getting relatively poorer. This widening has intensified the discontent of the peoples of the LDCs. The equation for social unrest is no secret:

aspirations − standard of living = social unrest

As the living standards of the developed nations have improved, the economic goals and aspirations of the LDCs have increased accordingly. But their actual standard of living in most instances has shown meagre improvement. The differential—social unrest—has clearly been on the increase. Witness the political instability in many of the LDCs.

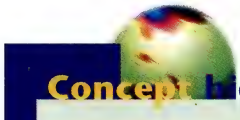
2 It is only since World War II that many of the LDCs have achieved political independence. Accompanying this freedom from colonial status has been a tremendous upsurge of nationalistic spirit. The LDCs seek the economic independence, respect and social status that they feel are due them as independent nations.

DUBIOUS LESSONS OF HISTORY

It is disarmingly tempting for the advanced nations to offer less fortunate nations a simple formula for economic development: 'Do what we did.' Such a formula

is glib, inaccurate and, to the informed citizens of poor nations, downright insulting.

The truth is that the now advanced nations initiated their development in an environment vastly different from that currently faced by the LDCs. Witness the favourable setting for Australian economic development—abundant and diverse mineral resources, adequate sources of power, a variety of soils and climatic conditions, a small but energetic labour force and, finally, the virtual absence of social and moral taboos on business and commerce. This is an environment ripe for economic growth. Throw these characteristics into reverse and you have the typical developing nation—a poor resource base, a lack of power, low-quality land, a teeming and untrained population, a tropical climate and a host of fetishes narrowly circumscribing any existing spirit of enterprise. The spontaneous growth arising from the favourable environments of the developed nations is not likely to blossom in such circumstances.



Concept Highlights

- The implications of underdevelopment are seen in the human suffering experienced by those in poverty and the lack of opportunity for development of human capital.
- The selected socioeconomic indicators in Table 17.3 demonstrate the lack of investment in individuals and the associated impoverishment they face.

BREAKING THE POVERTY BARRIER

The avenues of economic growth are essentially the same for both advanced and developing nations:

1. Existing supplies of resources must be used more efficiently. This entails not only the elimination of unemployment, but also the achievement of greater efficiency in the allocation of resources.
2. The supplies of productive resources must be altered—typically, increased. By expanding the supplies of raw materials, capital equipment, effective labour power and technological knowledge, a nation can push its production possibilities curve to the right (see Chapter 16).

Why have some nations been so successful in pursuing these avenues of growth while other countries have lagged far behind? The answer, as noted above, lies in differences in the physical and sociocultural environments of the various nations. Our plan of attack is to examine the obstacles in the LDCs to altering the quantities and improving efficiency in the use of:

1. natural resources
2. human resources
3. capital goods
4. technological knowledge.

Emphasis here will be on the private sector of the economy. In addition, social and institutional impediments to growth will be illustrated. Finally, we will analyse the roles of government and foreign aid in the development process.

NATURAL RESOURCES

There is no simple generalisation with respect to the role of natural resources in the economic development of the LDCs. This is true mainly because the distribution of natural resources among these nations is very uneven.

Some LDCs have valuable deposits of bauxite, tin, copper, tungsten, nitrates, petroleum and so on. In a few instances LDCs have been able to use their natural resource endowments to achieve rapid growth and a significant redistribution of income from the rich to the poor nations. The Organisation of Petroleum Exporting Countries (OPEC) is, of course, the outstanding example. However, we must recognise that in many cases natural resources are owned or controlled by the huge multinational corporations of the IACs, to the end that the economic benefits from these resources are largely diverted abroad. Natural resources may also be controlled by a powerful minority in the LDC itself, where benefits from the exploitation of natural resources are not passed on to the rest of the community.

Other LDCs simply lack mineral deposits, face a paucity of arable land, and have few sources of power. It is important to note that the vast majority of the less developed countries are located in Central and South America, Africa, the Indian subcontinent and South-East Asia, where tropical climates prevail. The hot, humid climate is not conducive to productive labour; crop and livestock diseases are widespread, and weed and insect infestations plague agriculture.

A weak resource base can pose a particularly serious obstacle to growth. Real capital can be accumulated and the quality of the labour force can be improved through education and training, but the natural resource base is largely unaugmentable. Hence, it is unrealistic for many of the LDCs to envision an economic destiny comparable with that of the United States or Australia. Automated steel, car and aluminium plants are not a part of their foreseeable economic futures. But, again, we must be careful in generalising—Switzerland, Israel and Japan, for example, have achieved relatively high levels of living despite restrictive natural resource bases.

EMPLOYMENT OF HUMAN RESOURCES

Three statements describe many of the typical developing economies with respect to human resources:

1. They are overpopulated.
2. Underemployment is widespread.
3. The quality of the labour force is exceedingly low.

OVERPOPULATION

Tables 17.1 and 17.2 suggest that the nations with the most meagre natural and capital resources have the largest populations to support. Table 17.4 compares population densities and population growth rates of regions of the world with the world as a whole. Most important, for the long run, is the vivid contrast of population growth rates. Over the 1965–97 period, the low-income LDCs experienced a 2.4 per cent average annual increase in population, as compared with a 0.8 per cent annual rate for the IACs. Recalling the 'rule of 70', the current rate suggests that the low-income LDCs' total population will double in about 29 years!

Table 17.4 Population and land area statistics for selected income categories and regions

Region	Population 1997 (millions)	Average annual population growth rate 1965–97 (% p.a.)	Area (thousands of square kilometres)
Low income	*2 036*	*2.4*	*31 244*
Middle income	*2 857*	*1.7*	*70 141*
Lower-middle income	2 283	1.7	47 035
Upper-middle income	574	1.9	23 10 6
Low and middle income	*4 893*	*2.0*	*101 385*
East Asia and Pacific	1 751	1.8	16 284
Europe and Central Asia	474	0.8	24 209
Latin America and Caribbean	494	2.1	20 462
Middle East and North Africa	280	2.8	11 000
South Asia	1 281	2.2	5 140
Sub-Saharan Africa	612	2.8	24 290
High income	*927*	*0.8*	*32 182*
Europe EMU	291	0.4	2 374
World	**5 820**	**1.8**	**133 567**

SOURCE: World Bank, 1999 World Development Indicators.

These simple statistics are a significant reason why the per capita income gap between underdeveloped and advanced nations has tended to widen. In some of the LDCs, the Malthusian population doctrine, rooted in the law of diminishing returns, is all too apparent. Population actually presses upon the food supply to the extent that per capita food consumption is pulled down perilously close to the subsistence level. In the worst instances, it is only the despicable team of malnutrition and disease and the high death rate it creates that keeps income near subsistence.

We can say that:

$$\text{per capita standard of living} = \frac{\text{consumer goods (food) production}}{\text{population}}$$

It would seem from a first glance at this equation that the standard of living could be raised by boosting consumer goods—particularly food production. But in reality the problem is much more complex than this, because any increase in consumer goods production that initially raises the standard of living is likely to induce a population increase. This increase, if sufficient in size, will dissipate the improvement in living standards, and subsistence living levels will again prevail.

But why does population growth tend to accompany increases in output? First, the nation's death or mortality rate will decline with the initial increases in production. This decline is the result of:

1. a higher level of per capita food consumption
2. the basic medical and sanitation programs that almost invariably accompany the initial phases of economic development.

Second, the birth rate will remain high or may even increase, particularly so as the medical and sanitation programs cut the rate of infant mortality. The cliché that 'the rich get richer and the poor get children' is uncomfortably accurate for many of the LDCs of the world. An increase in the per capita standard of living may give rise to a population upsurge, which will cease only when the standard of living has again been reduced to the level of bare subsistence.

In addition to the fact that rapid population growth can translate an expanding GDP into a stagnant or slow-growing GDP per capita, there are less obvious reasons why population expansion is an obstacle to development.

In the first place, large families reduce the capacity of households to save, and this inability restricts the economy's capacity to accumulate capital. Second, as population grows, more investment is required simply to maintain the amount of real capital per person. If investment fails to keep pace, each worker will have fewer tools and equipment, and this will cause worker productivity (output per worker) to fall. Declining productivity implies stagnating or declining per capita incomes. Third, given that most LDCs are heavily dependent upon agriculture, rapid population growth may result in the overuse of limited natural resources such as land. The much-publicised African famines are partially the result of past overgrazing and overplanting of land, caused by the pressing need to feed a growing population. Finally, rapid population growth in the cities of the LDCs, accompanied by unprecedented flows of rural migrants, is generating massive urban problems. Substandard housing in impoverished slums, deteriorating public services, congestion, pollution and crime are all problems that are seriously exacerbated by rapid population growth. The resolution or ameliorating of these difficulties necessitates a diversion of resources from growth-oriented uses.

Most authorities advocate birth control as the obvious and most effective means for resolving this dilemma. And breakthroughs in contraceptive technology in the last three decades have made this solution increasingly relevant. But the obstacles to population control are great. Low literacy makes it difficult to disseminate information on the use of contraceptive devices. In peasant agriculture, large families are a major source of labour. Further, adults may look on having many children as a kind of informal social security system: the more children you have, the greater the probability of having a relative to care for you during old age. Finally, many nations that stand to gain the most through birth control are often the least willing, for religious and sociocultural reasons, to embrace contraception programs. Population growth in Latin America, for example, is among the most rapid in the world.

There are a few success stories, however. China's 'one-child program', begun in the late 1970s, has reduced its population growth from 2.7 per cent per year in 1965–73 to 1.2 per cent in the 1990–94 period. Thus its average growth rate in population was 1.7 per cent per annum between 1965 and 1997. This reduction in population growth, coupled with a large increase in food production, has meant that China has significantly improved the dietary standards of its people. However, China's one-child policy has been difficult to enforce, particularly in rural areas, and has sometimes been effective at the cost of increased infanticide of female children.

Caution: Not all LDCs suffer from overpopulation; nor may we conclude that a large population necessarily means underdevelopment. The points to note are that:

1 a large and rapidly growing population may pose a special obstacle to economic development

2 many of the LDCs are so burdened.[2]

Global SNAPSHOT

WORLD POPULATION GROWTH FROM YEAR 0 TO 2050

The world's population is increasing annually and is tipped to reach nearly 9 billion by 2050 from its current level of around 6 billion. The implications for the world's ability to provide for all of its citizens are significant.

Year	Estimated world population (billions)
0	0.30
1000	0.31
1250	0.40
1500	0.50
1750	0.79
1800	0.98
1850	1.26
1900	1.65
1910	1.75
1920	1.86
1930	2.07
1940	2.30
1950	2.52
1960	3.02
1970	3.70
1980	4.44
1990	5.27
2000	6.06
2010	6.79
2020	7.50
2030	8.11
2040	8.58
2050	8.91

SOURCE: United Nations, United Nations 1998 Revision of the World Population Estimates and Projections, *http://popin.org/pop1998/4.htm, December 1999.*

Questions

1. Calculate the average annual rate of growth in the world's population over each of the periods covered in the table.
2. What is the pattern of the rate of growth in the world's population over time? Has it increased or decreased over the last five decades?
3. Is the rate of growth in the world's population projected to increase or decrease over the next five decades? Explain.
4. Based on your analysis of changes in the rate of growth in the world's population over time, do you expect the population to stabilise at some level? Explain.

UNEMPLOYMENT

Disguised unemployment: unemployment that is not recognised, or measured, because the individuals concerned are currently 'employed', although they are underemployed and contribute little or nothing to total output.

Rapid rural–urban migration: the rapid transfer of rural labour to urban centres. Often precipitated by a substantial urban–rural wage differential, which, due to the lack of actual job opportunities in urban areas, leads to substantial increases in unemployment rates.

Apart from the drag of overpopulation, the LDCs are faced with serious unemployment problems. The traditional view had been that the LDCs' unemployment problem was essentially one of **disguised unemployment**. In particular, it was held that a large portion, perhaps 25 or 30 per cent, of agricultural labour was underemployed, or surplus, labour, in that it contributed little or nothing to total agricultural output. This raised the optimistic prospect that such labour might be transferred to industry or other non-agricultural production without diminishing food production. The extra output resulting from this labour transfer might be largely in the form of capital goods to generate further growth.

But more recent analysis suggests an unemployment problem of a different character. In most LDCs there has occurred a substantial migration of population from rural to urban areas. This migration is motivated by the expectation of finding jobs with higher wage rates than are available in agricultural and other rural employments. However, this huge migration makes it very unlikely that a migrant will in fact obtain a job, leading to excess labour supply and population pressures in the cities.

Stated differently, migration to the cities has greatly exceeded the growth of urban job opportunities, resulting in very high urban unemployment rates. In fact, **rapid rural–urban migration** has given rise to urban unemployment rates that are two or three times as great as rural rates. Unemployment rates of 29 to 30 per cent or more are not uncommon in the major cities in developing countries. Consequently, although expected income in the urban environment exceeds that available in rural areas, actual urban incomes are frequently lower than rural incomes for those who are unemployed or underemployed.

QUALITY OF THE LABOUR FORCE

Human capital: the embodiment of productive capacity in the labour force; investment in people.

Entrepreneurial class: the group in the community willing to bear risks, accumulate capital and provide the organisational requisites essential to economic growth, in return for incomes in the form of profit.

Though high in numbers, the populations of the LDCs are pitifully short on productivity. Poor countries have simply not been able to invest sufficiently in their **human capital** (Table 17.3, columns 3 and 5), leaving their workforces with levels of productivity lower than those achieved by the workforces in the IACs; that is, expenditures on health and education have been meagre. Malnutrition, low levels of literacy, the absence of proper medical care, and insufficient educational facilities all contribute to populations that are ill-equipped for economic development and industrialisation.

Particularly vital is the absence of a vigorous **entrepreneurial class** willing to bear risks, accumulate capital and provide the organisational requisites essential to economic growth. Closely related to the lack of entrepreneurship is a significant lack of individuals with management skills suited to organisational activities and middle management. The LDCs thus face a dearth of labour that is prepared to handle the routine supervisory functions basic to any program of development.

Asian FOCUS — AGE–DEPENDENCY RATIOS IN ASIA

The population of the world, especially that in the developed nations, is becoming older on average. The implication of this change? That the number of those working relative to those retired and dependent on the government—and hence the taxes of those in the workforce—is falling. The effects are already being felt to varying degrees within our region.

Country or region	Age–dependency ratio, 1997 (dependants as proportion of working-age population)
Australia	0.5
China, mainland	0.5
China, Hong Kong SAR	0.4
India	0.7
Indonesia	0.6
Japan	0.4
Malaysia	0.6
New Zealand	0.5
Singapore	0.4
Thailand	0.5
Vietnam	0.7
Low- and middle-income countries in:	
East Asia and Pacific	0.5
Europe and Central Asia	0.5
South Asia	0.7
World	**0.6**

SOURCE: World Bank, 1999 World Development Indicators.

Questions

1. In which countries is the problem of higher age–dependency ratios most severe?
2. What implications for government and private expenditure does an ageing population imply? Outline some of the areas in which expenditures would be most affected.
3. Which features give rise to an increase in the age–dependency ratio? Does this suggest any possible solutions for those countries most affected by the problem? Explain.

CAPITAL ACCUMULATION

Most economists feel that an important focal point of economic development is the accumulation of capital goods. There are several reasons for this emphasis on capital formation:

1. All LDCs suffer from a critical shortage of capital goods—factories, machinery and equipment, public utilities and so on. Better-equipped labour forces would greatly enhance the productivity of the LDCs and help to boost per capita output and incomes. As we found out in Chapter 16, there is a close relationship between output per worker and real income per worker.

Increased output per worker makes it possible for per-worker incomes to be increased. A basic method by which per-worker output can be increased is through an increase in the stock of capital per worker. Indeed, empirical studies for the developing economies suggest that a 1 per cent increase in the ratio of investment to GDP will increase the growth rate by approximately 0.1 per cent.[3]

2 Increasing the stock of capital goods is crucial because of the very limited possibility of increasing the supply of arable land. If there is little likelihood of offsetting the law of diminishing returns in agriculture by increasing the supply of land, the obvious alternative is to counter its operation by better equipping available agricultural workers, or by providing industrial capital to which this labour can be reallocated.

3 Once initiated, the process of capital accumulation may be cumulative. If capital accumulation can increase output ahead of population growth, a margin of saving may arise that permits further capital formation. In a sense, capital accumulation can feed upon itself.

Let us first consider the prospects for LDCs of accumulating capital domestically. Then we will examine the possibility of foreign capital flowing into them. In each case we are concerned with private capital; public investment will be considered later.

DOMESTIC CAPITAL FORMATION

How does a developing nation—or any nation for that matter—accumulate capital? The answer: through the process of saving and investing. A nation must save—that is, refrain from consumption—to release resources from consumer goods production. Investment spending must then occur to absorb these released resources in the production of capital goods. But the impediments to saving and investing are much greater in a low-income nation than in an advanced economy.

The savings potential

Consider first the savings side of the picture. The situation here is mixed, and varies greatly between countries. Some of the very poor countries, such as Ethiopia, Bangladesh, Uganda, Haiti and Madagascar, save only from 2 to 5 per cent of their national outputs. They are simply too poor to save a significant portion of their incomes. Interestingly, however, other LDCs save as large a percentage of their national output as do the advanced industrial countries. For example, in 1997, India and China saved 20 and 48 per cent of their national outputs respectively, as compared to 30 per cent for Japan, 22 per cent for Germany, and 16 per cent for the United States. The problem is that the national outputs of the LDCs are so low that, even when saving rates are comparable to those of the advanced nations, the total absolute volume of saving is not large. As we shall see shortly, foreign capital inflows and foreign aid are means of supplementing domestic saving.

There is also the problem in many of the LDCs that the level of saving is frequently made possible by the highly unequal distribution of income that characterises many of the LDCs. Ironically, both the poorest and the richest families of the world reside in the least developed countries. Those fortunate few with astronomical incomes—the tribal chieftains, the kings, the large landowners, the oil-rich sheiks and the political leaders—do have ample capacity to save. Unfortunately, these high-income receivers frequently dispense their wealth on

the hoarding of precious metals or the purchasing of existing properties in the form of land or urban real estate. The monetary saving that does occur often flows abroad for safekeeping or to take advantage of the more convenient saving outlets provided by the securities markets of the advanced nations. The important point is that those few who have the ability to save are often unwilling to do so or, if they are willing, do not make their savings available for investment in productive facilities.

Investment obstacles

The investment side of the capital formation process abounds with equally serious obstacles. These obstacles undermine the rate of capital formation even when a sufficient volume of savings is available to finance the needed investment. The major obstacles to investment fall into two categories—the lack of investors and the lack of incentives to invest.

Oddly enough, in some LDCs the major obstacle to investment is basically the lack of businesses willing to assume the risks associated with investment. This, of course, is a special case of qualitative deficiencies of the labour force previously discussed.

But even if substantial savings and a vigorous entrepreneurial class are present, an essential ingredient in capital formation—the incentive to invest—may be weak. And clearly a host of factors may combine in a developing nation to cripple investment incentives. Political and social instability—in particular, the fear of nationalisation of industry—may dampen the incentive to invest. Furthermore, it may actually lead to significant outflows of investment funds, a process known as **capital flight**. In Latin America during the 1980s, it is thought that this process of capital flight may have offset inflows of funds through foreign aid and loans to these countries. In the late 1990s, the flight of capital from many of the developing countries in Asia, such as Thailand, caused a collapse in the value of their currencies, and precipitated significant collapses in their banking sectors and property markets.

Capital flight: large-scale outflows of investment funds from the LDCs to the comparative safety of banks and other financial centres of the IACs to prevent either seizure or the erosion of value through inflation or depreciation of the currency.

Other factors may also reduce incentives to invest. Very low incomes mean a limited domestic market—a lack of demand—for most non-agricultural goods. This factor is especially crucial when we recognise that the chances of successfully competing with the mature industries of the advanced nations in international markets are small. Then, too, the previously cited lack of trained administrative and operating personnel may be a vital factor in retarding investment. Finally, many of the LDCs simply do not have a sufficient accumulation of the **basic social capital** (public infrastructure and utilities) that is a prerequisite to private investment of a productive nature. Poor roads, inadequate railways, little gas and electricity production, antiquated communications, unsatisfactory housing and meagre educational and public health facilities scarcely provide an inviting environment for investment spending.

Basic social capital: public infrastructure and utilities, e.g. roads, railways, schools, hospitals, housing, power stations.

The absence of basic social capital presents more of a problem than we might first surmise. It means that a great deal of investment spending that does not directly result in the production of goods and that may not be capable of bearing profits must take place prior to, and simultaneously with, productive investment in manufacturing machinery and equipment. Statistics for the advanced nations indicate that about 60 per cent of gross investment is for housing, public works and public utilities, leaving about 40 per cent for directly productive investment in manufacturing, agriculture and commerce. These figures probably understate the percentage of total investment that must be devoted to social capital in the emerging nations. The volume of investment required to initiate economic development may be much greater than at first appears.

Non-financial investment: the accumulation of capital by transferring surplus agricultural labour to the improvement of agricultural facilities or to the construction of basic social capital.

There is one potential bright spot in this otherwise dismal picture—the possibility of accumulating capital through **non-financial investment**. Given the prerequisite leadership and willingness to cooperate, capital can be accumulated by transferring surplus agricultural labour to the improvement of agricultural facilities or to the construction of basic social capital. If each agricultural village would allocate its surplus labour to the construction of irrigation canals, wells, schools, sanitary facilities and roads, significant amounts of capital might be accumulated at no sacrifice of consumer goods production. Non-financial investment simply bypasses the problems embodied within the financial aspects of the capital accumulation process. Such investment does not require consumers to save portions of their money income; nor does it presume the presence of an entrepreneurial class anxious to invest. In brief, provided the leadership and cooperative spirit are present, non-financial investment is a promising avenue for the accumulation of basic capital goods.

Business IMPLICATION

GROWTH, THE LDCs AND NEW MARKETS



Many companies look at the rapid growth in GDP per capita occurring in LDCs in, for example, the Asian region, and conclude that there will be a rapid expansion of market opportunities for them. But the key question should perhaps be: how many people will be able to afford my product? This may not be indicated in GDP per capita figures or by their rate of growth. The reason? GDP per capita ignores the distribution of incomes within countries and regions of countries. The implication of this for business is that the size of the market potentially available to them may be relatively small if the benefits of a growing income per capita are concentrated in the hands of a relatively small part of the population.

TECHNOLOGICAL ADVANCE

Technological advance and capital formation are frequently part of the same process. Yet there are advantages in treating technological advance (or the discovery and application of new ideas concerning methods of producing) and capital formation (or the accumulating of capital goods) as separate processes.

This is particularly so in discussing the LDCs. We view technological advance in the IACs as an essentially evolutionary process, where researchers first inch forwards the boundaries of technological knowledge. Then follow the financing and construction of the ever larger amounts of complex capital equipment that the technological advance demands. But this picture is not accurate for the LDCs. The rudimentary state of their current technology puts these nations far from the frontiers of technological advance. There already exists an enormous body of technological knowledge accumulated by the IACs that the LDCs might adopt and apply without undertaking the expensive tasks of research. For example, the adoption of modern crop-rotation practices and the introduction of contour ploughing require no additional capital equipment, and they may contribute very significantly to productivity. By raising grain storage bins a few centimetres above the ground, a large amount of grain spoilage can be avoided. Such changes may sound minor to people of advanced nations. However, the resulting gains in productivity can mean the difference between subsistence and starvation in some poverty-ridden nations.

In most instances the application of either existing or new technological knowledge means the use of new and different capital goods. But, within limits,

this capital can be obtained without an increase in the rate of capital formation; that is, if the annual flow of replacement investment is rechannelled from technologically inferior to technologically superior capital equipment, productivity can be increased out of a constant level of investment spending. Actually, some technological advances may be capital-saving rather than capital-using. A new fertiliser, better adapted to a nation's topography and climate, might be cheaper than that currently employed. A seemingly high-priced metal plough that will last ten years may be cheaper in the long run than an inexpensive but technologically inferior wooden plough that requires annual replacement.

But we must be realistic about the transferability of advanced technologies to the LDCs. In the industrially advanced nations, technologies are usually predicated upon relatively scarce, highly skilled labour and relatively abundant capital. Such technologies tend to be **capital-using** or, alternatively stated, **labour-saving**. In contrast, the LDCs require technologies that are appropriate to their resource endowments or, in other words, to large quantities of abundant, unskilled labour and very limited quantities of capital goods. Labour-using and capital-saving technologies are typically appropriate to the LDCs. This means that much of the highly advanced technology of the advanced nations is inappropriate in the LDCs and therefore they must develop their own technologies. You will recall, too, that many of the LDCs have 'traditional economies' (Chapter 2) and are not highly receptive to change. This is particularly true in peasant agriculture, which dominates the economies of most LDCs. A technological advance that fails can mean hunger and malnutrition; therefore, there is a strong propensity to retain traditional production techniques.

SOCIOCULTURAL AND INSTITUTIONAL FACTORS

Purely economic considerations are not sufficient to explain the occurrence or the absence of economic growth. Substantial social and institutional readjustments are usually an integral part of the growth process. Economic development involves not only changes in a nation's physical environment (that is, new transport and communications facilities, new schools, new housing, new plants and equipment) but also drastic changes in the ways in which people think, behave and associate with one another. Emancipation from custom and tradition is frequently the fundamental prerequisite of economic development. Possibly the most crucial but least tangible ingredient in economic development is the **'will to develop'**. Economic growth may hinge upon what individuals and social groups want, and whether they want it badly enough to change their old ways of doing things and to work hard at installing the new.

SOCIOCULTURAL OBSTACLES

Sociocultural impediments to growth are numerous and varied. Let us consider a few examples.

1. Some of the least developed countries have failed to achieve the preconditions for a national economic unit. Tribal allegiances take precedence over national identity. Warring tribes confine all economic activity within the tribe, eliminating any possibility for production-increasing specialisation and trade.

2. Religious beliefs and observances may seriously restrict the length of the work day and divert resources that might otherwise have been used for investment to ceremonial uses. In rural India, for example, total ceremonial expenditures

are estimated at about 7 per cent of per capita income.[4] More generally, religious and philosophical beliefs may be dominated by the 'capricious universe view'—the notion that there is little or no correlation between an individual's activities and endeavours on the one hand, and the outcomes or experiences he or she encounters on the other.

> *If the universe is deemed capricious, the individual will learn to expect little or no correlation between actions and results. This will result in a fatalistic attitude ...*
>
> *These attitudes impinge on all activities, including saving, investment, long-range perspective, supply of effort, and family planning. If a higher standard of living and amassing of wealth is treated as the result of providence rather than springing from hard work and saving, there is little rationale for saving, hard work, innovations, and enterprise.*[5]

3 The existence of a caste system—formal or informal—causes labour to be allocated to occupations on the basis of caste or tradition rather than on the basis of skill or merit.

INSTITUTIONAL OBSTACLES

Political corruption and bribery are not uncommon in many LDCs. School systems and public service agencies are often ineptly administered and their functioning impaired by petty politics. Tax systems are frequently arbitrary, unjust, cumbersome and detrimental to incentives to work and invest. Political decisions are often motivated by the desire to enhance the nation's international prestige, rather than to fostering development. For example, India's explosion of a nuclear bomb in 1974 created a substantial controversy over societal priorities.

Because of the predominance of farming in the LDCs, the problem of achieving the institutional environment in agriculture that is most conducive to increasing production must be a vital consideration in any growth program. More specifically, the institutional problem of **land reform** demands attention in virtually all LDCs. But the needed reform may vary tremendously between specific nations. In some LDCs the problem assumes the form of excessive concentration of land ownership in the hands of a few wealthy families. This situation is demoralising for the tenants, weakening their incentive to produce, and is typically not conducive to capital improvements. At the other extreme is the absurd arrangement where each and every family owns and farms a minute fragment of land far too small for the application of modern agricultural technology.

Land reform: the reform of current systems of ownership and tenure so as to improve the efficiency of allocation of land used for agricultural production.

An important complication to the problem of land reform lies in the fact that political considerations often push reform in the direction that is least defensible on economic grounds. For many nations, land reform may well be the most acute institutional problem to be resolved in initiating the process of economic development.

THE VICIOUS CIRCLE: A SUMMING UP

It is important to recognise that many of the characteristics of the LDCs just described are simultaneously causes and consequences of their poverty. These countries are caught in a **vicious circle of underdevelopment**—they are poor because they are poor! Consider Figure 17.1. The fundamental feature of a developing nation is low per capita income. Being poor, a family has little ability or incentive to save. Furthermore, low incomes mean low levels of demand. As a result, there are few available resources on the one hand, and no strong

Vicious circle of underdevelopment: low per capita incomes are associated with limited ability or incentive to save, and low levels of demand; limited available resources and lack of demand reduce incentives for investment in real or human capital; a lack of investment in real and human capital means that labour productivity is low; output per person is real income per person, so per capita income is low; and so on.

Rate of capital accumulation: the rate at which net investment, or additions to the capital stock, occurs.

incentives on the other for investment in real or human capital. This means that labour productivity is low. And, since output per person is real income per person, it follows that per capita income is low.

Many experts feel that the key to breaking out of this vicious circle is to increase the **rate of capital accumulation**—that is, to achieve a level of investment of, say, 10 per cent of the national income. But Figure 17.1 reminds us that the real villain for many developing nations—rapid population growth—may be waiting in the wings to undo the potentially beneficial effects of this higher rate of capital accumulation. You will recall our macro growth model of Chapter 16. Suppose a developing country manages to increase its average propensity to save to 10 per cent, and that all this saving is absorbed as investment in real capital. Now, if we assume, not unrealistically, that the capital-output ratio is, say, 4, then real output will rise by 2.5 per cent per year.[6] Given a stable population, real income per capita will also rise by 2.5 per cent per year. If this per capita growth rate persists, the economic standard of living will *double* in about 28 years. But what if population grows at, say, the Nepalese rate of about 2.5 per cent per year? Then real income per person is unchanged and the vicious circle persists!

More optimistically, if population can be kept constant or constrained to some growth rate significantly below 2.5 per cent, then real income per person will rise. And this implies the possibility of still further enlargement in the flows of saving and investment, continued advances in productivity and the continued growth of per capita real income. If a process of self-sustaining expansion of income, saving, investment and productivity can be achieved, the self-perpetuating vicious circle of poverty can be transformed into a self-generating, beneficent circle of economic progress. The trick, obviously, is to make effective those policies and strategies that will accomplish this transition.

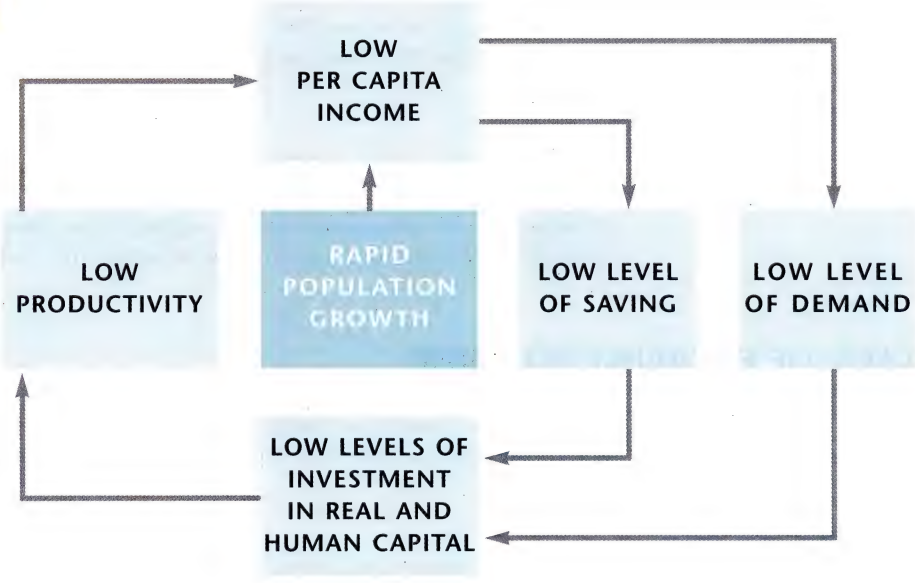


FIGURE 17.1
The vicious circle of underdevelopment

Lower per capita incomes make it extremely difficult for poor nations to save and invest, a condition that perpetuates low productivity and low incomes. Furthermore, rapid population growth may quickly absorb increases in per capita real income and thereby may negate the possibility of breaking out of the underdevelopment circle.

Concept highlights

- Initial scarcities of natural resources and the limited possibility of augmenting existing supplies may impose a rigid limitation on a nation's capacity to develop. The presence of large populations in the LDCs contributes to low per capita incomes. Per capita incomes frequently fall back to near-subsistence levels following strong per capita income growth.
- The traditional view is that LDCs have substantial disguised unemployment in the form of surplus agricultural labour. However, more recent analysis suggests that rural–urban migration has generated high city unemployment rates in LDCs.
- In the LDCs both the saving and investment aspects of the capital-formation process are impeded by formidable obstacles. The absence of a vigorous entrepreneurial class, low absolute savings and the weakness of investment incentives are the major obstacles to capital accumulation. Additionally, political and social instability, the lack of large domestic markets, shortages of operating and administrative personnel and deficiencies of basic social capital all contribute to an uninviting investment environment. However, non-financial investment provides an avenue for increasing the capital stock.
- The concept of the vicious circle of underdevelopment brings together many of the obstacles to growth and says in effect that 'poor countries are poor because of their poverty'.

ROLE FOR GOVERNMENT

THE POSITIVE VIEW

Economists agree that, at least during the initial stages of growth in the LDCs, government can be expected to play a major role. The reasons for this stem from the character of the obstacles facing these nations.

LAW AND ORDER

Some of the poorest countries are plagued by widespread crime, racial conflict or border disputes, which divert both attention and resources from the task of development. A strong and stable national government is needed to establish domestic law and order and to achieve peace and unity.

LACK OF ENTREPRENEURSHIP

The absence of a sizeable and vigorous entrepreneurial class, ready and willing to accumulate capital and initiate production, indicates that in many cases private enterprise is intrinsically not capable of spearheading the growth process.

PUBLIC GOODS

Many of the basic obstacles to economic growth centre on deficiencies of social goods and services. Sanitation and basic medical programs, education, irrigation and soil conservation projects, and the construction of highways and transport communication facilities are all essentially indivisible goods and services yielding widespread spillover benefits. Government is the sole institution in a position to provide these goods and services in required quantities.

FORCED SAVING AND INVESTMENT

Government action may also be required to break through the saving–investment dilemma that impedes capital formation in the LDCs. We have noted that when the ability to save does exist, the desire to hoard gold or buy real estate diverts saving to non-productive uses. And, when an entrepreneurial class exists, the deficiency of domestic markets and the temptation to invest in the advanced nations may similarly slow capital formation.

It may well be that only governmental fiscal action can provide a solution, by forcing the economy to accumulate capital. The alternatives here are essentially twofold. One is to force the economy to save by increasing taxes. These tax revenues can then be channelled into top-priority investment projects. The problems of honestly and efficiently administering the tax system and achieving a relatively high degree of compliance with tax laws are frequently very great.

The other alternative is to force the economy to save through inflation. Government can finance capital accumulation by printing and spending new money or by selling bonds to banks and spending the proceeds. The resulting inflation is the equivalent of an arbitrary tax upon the economy. There are, however, serious arguments against the advisability of saving through inflation. In the first place, inflation tends to distort the composition of investment away from productive facilities to such items as luxury housing, precious metals and jewels, or foreign securities, which provide a better hedge against rising prices. Furthermore, significant inflation may reduce voluntary saving as potential savers become less willing to accumulate depreciating money, or securities payable in money of declining value. Internationally, inflation may boost the nation's imports and retard its flow of exports, creating balance of payments difficulties.

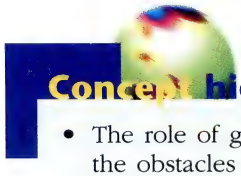
SOCIAL–INSTITUTIONAL PROBLEMS

Government is obviously in the key position to deal effectively with the social–institutional obstacles to growth. Land reform and the control of population growth are basic problems that call for the broad approach that only government can provide. And government is in an advantageous position to stimulate the will to develop.

PUBLIC SECTOR PROBLEMS

But all this must not blind us to certain potential problems and disadvantages that a governmentally directed development program may entail. If entrepreneurial talent is lacking in the private sector, can we expect leaders of quality to be present in the ranks of government? Is there not a real danger that government bureaucracy will provide an impediment, not a stimulus, to much-needed social and economic change? And, too, what of the tendency of centralised economic planning to favour the spectacular 'showpiece' projects at the expense of less showy but more productive programs? Might not political objectives take precedence over the economic goals of a governmentally directed development program?

Development economists are more cautious about the potential of government to assist in the growth process than they were 25 years ago. Government maladministration and corruption are frequently present in LDCs; political leaders often grant monopoly rights to relatives, friends and political supporters; state-owned enterprises are often run by managers with strong political affiliations rather than management competence. Thus the government must be viewed not only as a potential catalyst in the development process, but also as a potential impediment to economic development and growth.



Concept highlights

- The role of government in the development of the LDCs is likely to be important. The nature of the obstacles to growth—the absence of an entrepreneurial class, the dearth of social capital, the saving–investment dilemma and the presence of social–institutional obstacles to growth—suggest the need for government action in initiating the growth process.
- The potential of the role of government must, however, recognise the potential problems of the public sector. Extensive bureaucracy, for example, may quash entrepreneurial endeavour.

ROLE OF THE ADVANCED NATIONS

What are the ways by which the advanced nations can help the less developed countries in their quest for growth? To what degree have these avenues of assistance been pursued?

Generally speaking, LDCs can benefit from:

1 an expanding volume of trade with advanced nations

2 foreign aid—that is, grants and loans from the governments of advanced nations

3 flows of private capital from the more affluent nations.

EXPANDING TRADE

Some authorities maintain that the simplest and most effective means by which the IACs can aid the LDCs is by lowering international trade barriers, so enabling the LDCs to expand their national incomes through an increased volume of trade.

Though there is undoubtedly some truth in this view, lowered trade barriers are not a panacea. It is true that some LDCs need only large foreign markets for their raw materials to achieve some measure of growth. But the problem for most of the LDCs is not that of obtaining markets for the utilisation of existing productive capacity or the sale of relatively abundant raw materials, but rather the more fundamental one of getting the capital and technical assistance needed to produce something for export!

Further, it must be recognised that close trade ties with advanced nations are not without disadvantages. In particular, a recession in the IACs can have disastrous consequences for the export earnings of LDCs. Stability and growth in the industrially advanced nations are clearly important to progress in the LDCs.

FOREIGN AID: PUBLIC LOANS AND GRANTS

Our vicious circle of underdevelopment emphasises the importance of capital accumulation in achieving economic growth. Foreign capital—both private and public—can obviously supplement an emerging country's saving and investment efforts and play a crucial role in breaking the circle of underdevelopment.

As noted earlier, most of the LDCs are sadly lacking in the basic social capital—irrigation and public health programs and educational, transport and communications systems—that is a prerequisite to the attraction of either domestic or foreign private capital. Foreign public aid is needed to tear down this major block to the flow of private capital to the LDCs.

DIRECT AID

World Bank: the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC) and the International Development Association (IDA).

Australia is a participant in the **World Bank**, the major objective of which is to assist LDCs in achieving growth. Supported by 180 member nations, the World Bank not only lends out of its capital funds, but also:

1 sells bonds and lends the proceeds

2 guarantees and insures private loans.

Several characteristics of the World Bank merit comment:

1 The World Bank is in a sense a 'last-resort' lending agency; that is, its loans are limited to productive projects for which private funds are not readily available.

2 Many World Bank loans have been for basic development projects—multi-purpose dams, irrigation projects, health and sanitation programs—the basic social capital prerequisite to substantial flows of private capital.

3 The World Bank has played a significant role in providing technical assistance to LDCs by helping them discover the most appropriate avenues of growth for their economic development.

Two World Bank affiliates have come into existence, functioning in areas where the World Bank has been weak. The International Finance Corporation (IFC) has the primary function of investing in private enterprise in LDCs. The International Development Association (IDA) makes 'soft loans'—that is, loans that may not be self-liquidating—to the very poorest of the LDCs on much more liberal terms than does the World Bank.

PRIVATE CAPITAL FLOWS

The developing countries have also received substantial flows of private capital from the advanced nations, mainly in the form of bank lending, direct foreign investment, bond purchases and private grants. In the 1960s these flows ranged from US$2 billion to US$4 billion per year. Inspired undoubtedly by an intensified search for oil and minerals, private flows grew dramatically in the 1970s, averaging US$28 billion per year. In 1981, these private capital flows to the LDCs amounted to about US$74 billion. However, largely due to the emerging debt problems of some of the LDCs during the 1980s, private capital flows fell sharply. By 1985 they had fallen to about US$31 billion, before recovering to just over US$40 billion by 1989.[7] This recovery continued into the 1990s with net private capital flows reaching a level of US$176 billion in 1993, US$192 billion in 1995 and US$214 billion in 1996. The level of net capital flows collapsed during the Asian crisis, reaching a low of US$66 billion in 1998 due to extreme nervousness among the IACs' investors. Capital flows are expected to recover to around US$119 billion in 2000.[8]

The advanced nations and their huge multinational corporations contend that the flow of private capital would be much larger if conditions in the LDCs were more receptive. In addition to all the previously mentioned deterrents to domestic capital accumulation in the poor nations, there are special obstacles to foreign investment. For example, foreign capital has often been subject to:

1 discriminatory taxation

2 limitations or prohibitions upon the withdrawal of profits

3 cumbersome government regulations and red tape

4 the ever-present danger of nationalisation without adequate compensation.

Partly these obstacles reflect a desire on the part of many of the LDCs to maintain control of the level and pattern of investment in their nations.

THE LDC DEBT CRISIS

What are the causes of LDC debt? What are its effects? What, if anything, might be done to resolve the debt problem?

LDC DEBT AND ITS GROWTH

LDC debt crisis: an inability to service existing debt, obligations and to attract further debt, which resulted from a convergence of forces during the 1970s and 1980s, and which has had serious adverse effects on the ability of the LDCs to improve their rates of economic growth.

During the 1970s and 1980s a convergence of forces—some of which have been referred to previously—had serious adverse effects on the LDCs, precipitating a **debt crisis**.

1 The dramatic run-up of oil prices by OPEC in 1973–74 and again in 1979–80 (raising the price of a barrel of oil from about $2.50 to $35) greatly increased the energy bill of the oil-importing LDCs. Also, inflation in the industrially advanced countries increased the cost of non-oil imports to LDCs. At the same time, the oil-exporting countries of OPEC were depositing their earnings in European banks. This increased the availability of loan finance for developing economies. The result: between 1973 and 1982 developing country debt had increased from US$130 billion to US$700 billion (of which US$562.5 billion was long-term debt).

2 In the early 1980s the developed nations—led by the United States—enacted anti-inflationary monetary policies. The tight monetary policies had two adverse effects on the LDCs. First, the general stagnation of the advanced countries that followed reduced their demand for the LDCs' raw material exports. Export incomes of the LDCs fell sharply, as did their terms of trade, reducing the ability of LDCs to pay back principal and service the interest on their debt. Second, the higher interest rates brought about by the tight monetary policies of the developed countries increased the LDCs' debt-service costs. This was complicated by the fact that a large proportion of the loans had been contracted at variable rates.

3 During 1981–84 the international value of the US dollar appreciated. Because a large proportion of LDC debt was denominated in US dollars, this further increased the cost to the LDCs of servicing their debts.

4 Finally, in 1982 Mexico was on the verge of defaulting on its debt. Creditors were forced to reschedule that debt and make further loans to Mexico. The Mexican debt of US$44 billion simply represented the major problem loan out of a total of US$71 billion of loans that had to be re-negotiated at this time. Of major concern to the governments of the developed economies was the impact that a high level of default on the LDCs' loans could have on the liquidity of the international (and their domestic) banking system. The debt crisis led to a fall in confidence in the LDCs and a sharp reduction in the level of bank lending to these countries. Bank lending to the LDCs fell from US$52.3 billion in 1981 to US$15.2 billion in 1985, and further to just US$8 billion in 1989. Added to this was the diversion of international funds to cover large budget deficits in the United States, funded by the sale of US government bonds—funds that might have been available to the LDCs, had this more 'secure' debtor not been in need.

To summarise—higher oil prices, falls in the LDCs' export earnings and their terms of trade, higher interest rates, appreciation of the US dollar, and major declines in bank lending to the LDCs combined to create the debt crisis.

Business IMPLICATION

MONETARY POLICY AND DEVELOPMENT IN THE LDCs



Debt has played an important role by providing funds for the economic development of many of the poorer nations in the world. However, debt comes at a price—the interest rate that is payable on it. The interest applicable on debt changes over time according to the general availability of and demand for funds, and shifts in the market's view of the creditworthiness of the borrowing country. As seen in such examples as the Mexican debt crisis, both the interest rate applicable to the debt and the view of the creditworthiness of the borrower can be the subjects of rapid change.

The increasing integration of global markets for funds and the increased emphasis placed on the use of monetary policy to fight inflation may have made debt an even riskier proposition for many developing nations. When the US Federal Reserve increases interest rates, the cost of borrowing funds increases in most regions of the world, while the willingness to lend to poorer nations may decline. The implication is that other policies for development, perhaps those centred around increased trade and the presence of equity investment in developing nations, may be required to ensure a more stable path for development in the future.

ECONOMIC CONSEQUENCES

Following the precipitation of the debt crisis in 1982, a period followed where creditor nations attempted to 'muddle through' on a nation-by-nation basis in cooperation with the International Monetary Fund. The debts of many LDCs were rescheduled—extended for a longer period—to reduce the burden on the LDCs of annual interest and principal repayments. In return for these concessions, the LDCs had to agree to domestic austerity programs to improve their prospects for debt repayment. Typically, this has meant that the LDCs have had to reduce their imports and increase their exports to generate greater trade surpluses to cover debt repayments. But increases in exports and reductions in imports imply that less consumption—a reduced standard of living—is available to residents of the LDCs. Additionally, with trade surpluses being used to repay debt, lower levels of investment are made in development projects. For this reason, it is not surprising that, while real GDP per capita grew at an annual average of 1.2 per cent in the LDCs during 1980, real GDP per capita *fell* by 0.8 per cent in the heavily indebted LDCs during the same period.

The debt crisis has also had adverse effects in the developed nations. Banks have been forced to write off some LDC debt as uncollectable, imposing losses on shareholders in these banks. Other LDC debt is being sold on the secondary markets at a considerable discount on face value, again forcing banks to realise a loss on this type of asset (the loan).

Has LDC debt exposure become a potential threat to the banking and financial systems of some developed economies? Although this was a concern in the mid-1980s, it was not an outcome. As we have already noted, LDC debt problems led to a major reduction in the level of new bank lending to the LDCs, and a major write-down in the value of remaining debt held. Thus banks' portfolios of assets were becoming increasingly diversified. Also, capital adequacy requirements *for banks* in most of the developed economies are such as to ensure the great stability of the banking system.

The major worry for the banks may be that, due to the passage of time, they have apparently forgotten the experiences of the 1970s and early 1980s. Recently there has been an expansion of lending by some of the major international banks

to the LDCs, especially to those in Latin America and to many areas of the financial system in Asia. Indeed, withdrawal and non-renewal of these funds was a significant factor in promoting the recent 'Asian crisis'. Although capital adequacy requirements *for banks* in most of the IACs still ensure the stability of their banking systems, a major concern is that the economic progress of heavily indebted LDCs relies too heavily on the continuation of a favourable international economic environment.

As seen in the Asian crisis, any slowdown in the international economy or in lending by the IACs may have a magnified effect on the progress of the LDCs, reducing the speed with which the banks recover both new and existing debt, and causing any new flows of funds to be withdrawn.

TOWARDS A 'NEW INTERNATIONAL ECONOMIC ORDER'?[9]

New International Economic Order (NIEO): a new structure for the relationship between the LDCs and the IACs which would see a lower level of exploitation of the situation of the LDCs by the IACs, and a recognition of the LDCs as equal partners in the world's economic and political institutions.

Despite past (and current) flows of private investment and foreign aid, the LDCs are far from content with their relationships vis-a-vis the industrially advanced nations. Actual growth has fallen far short of aspirations. The developing economies' per capita GDP grew by an average of 1.9 per cent per year in the 1965–97 period. This has clearly not been sufficient to keep the total and per capita GDP gaps between the advanced countries and the LDCs from widening. And, despite achieving political independence, the LDCs feel that an economic-based **neo-colonialism** persists. Both private investment and public aid, it is contended, have tended to exploit the developing economies and keep them dependent upon, and subservient to, the rich nations. It is no surprise that the LDCs have pressed for basic changes in the international economic order that would accelerate their growth and redistribute world income to their benefit. In arguing for the creation of a **New International Economic Order (NIEO)**[10], spokespersons for the LDCs make the following arguments and proposals.

RULES OF THE GAME

Although they represent the vast majority of the world's population, LDCs have only about one-third of the total votes in the key international institutions that formulate the overall character of the world economy. Indeed, the LDCs were simply not involved in the creation after World War II of the institutions and programs that establish the rules and regulations by which international trade, finance and investment are conducted. For example, the industrially advanced nations control the International Monetary Fund (see Chapter 19), which provides monetary reserves for the financing of international trade. The LDCs question the equity and legitimacy of these rules and argue that the institutions and programs of the existing economic order are stacked against them.

TRADE BARRIERS

LDCs contend that, rhetoric to the contrary, the advanced nations have retarded their development by using a variety of trade barriers, such as tariffs and import quotas, to deprive them of export markets. The LDCs feel they are in a 'Catch-22' situation. If they effectively utilise the financial and technical aid provided by the advanced nations to create efficient low-cost manufacturing industries, the LDCs

Preferential tariff treatment: a system whereby the IACs place a lower rate of tariff on exports from LDCs than that applied to imports from other IACs, with the objective of stimulating the industrial growth of the IACs.

then become competitive with industries in the advanced nations. The advanced nations respond to this situation by using trade barriers to protect their domestic industries from the new competition! The LDCs have argued for **preferential tariff treatment**—that is, lower tariffs than those paid by developed countries—to stimulate their industrial growth.

EXPLOITATION AND DEPENDENCE

LDCs contend that most of the contracts, leases and concessions that the multinational corporations of the advanced countries have negotiated with them have benefited the multinationals at the expense of the host country. The LDCs argue that the major portion of the benefits from the exploitation of their natural resources accrues to others. Further, the LDCs seek to achieve greater diversification and therefore greater stability in their economies.

Foreign private capital, however, seeks out those industries that are currently the most profitable—that is, the ones that are now producing for the export market. In brief, while the LDCs strive for less dependence on world markets, flows of foreign capital often tend to enhance that dependence. International companies are after profits, and they allegedly have no particular interest in the economic independence, diversification or overall progress of the LDCs.

TERMS OF TRADE

As exporters of raw materials (bauxite, tin, copper, manganese) and basic farm products (cocoa, coffee, cotton, rubber, tea, timber), the LDCs are greatly affected by the extreme price fluctuations that characterise these highly competitive markets. In particular, the higher variability of their import earnings makes it very difficult for LDCs to plan and finance development programs. Worse yet, the long-run price trend of LDC commodity exports has been downwards.

On the other hand, the LDCs import manufactured goods produced by the corporate giants of the advanced nations that have the market power to charge high prices. Thus the LDCs argue that, over time, the **terms of trade** have shifted against them; the prices of their exports tend to be depressed while the prices of their imports tend to rise. Hence, it takes more of the LDCs' exports to purchase a given quantity of imports.

DEBT RELIEF

The LDCs have also sought debt relief. Their view is that the present level of debt is so high as to be an impediment to LDC growth. Arguing that the prosperity of the developed nations depends upon the prosperity of the LDCs, the LDCs feel that writing off some portion of the debt would be mutually advantageous. Thus, in mid-1987, 24 LDC governments sought both debt relief and additional loans at the annual joint meeting of the World Bank and the International Monetary Fund.

AID AND REDISTRIBUTION

The LDCs take the position that past foreign aid has been insufficient and ineffective. It has been insufficient in that, as a group, the IACs make annual aid contributions equal to only about 0.25 per cent of their GDPs.

Aid has been relatively ineffective for several reasons. First, much of it is 'tied' to the donor country; for example, American aid must be spent on American goods and services. This means that LDCs are denied the opportunity to 'shop around' in world markets for potentially better buys on capital goods and technological assistance. Second, inflation has greatly eroded the real value of aid dollars to recipient nations. Third, as already noted, a larger portion of aid must be used to pay interest on the external debts of the LDCs and, hence, is not available for development.

One of the objectives of the NIEO is to have each advanced nation progressively increase its aid to 0.7 per cent of its GNP, as recommended by the United Nations two decades ago. This aid should have 'no strings attached' and should be provided on a long-term and automatic basis. The influential Brandt Commission[11] endorsed this 0.7 per cent goal, implying more than a doubling of the current level of developmental aid.

The NIEO agenda has remained very controversial. While the LDCs felt the NIEO proposals to be egalitarian and just, many of the IACs have envisioned them as a demand for a massive redistribution of world income and wealth, which to them is simply not on the cards. Many of the IACs feel that there is no 'quick fix' for underdevelopment and that the LDCs must undergo the same process of patient hard work and gradual capital formation as did the advanced nations over the past two centuries.

A further barrier to the adoption of the NIEO has been the increasing tendency for the nations of the world to form trading blocs. With many of the developing economies turning towards an export-oriented growth strategy, the threat posed by the formation of these trading blocs, and the tariff-free internal markets this implies, has assumed more importance for many LDCs than the call for the NIEO.

Concept highlights

- The IACs can assist in the development of the LDCs by reducing trade barriers and by providing both private and public capital.
- The LDCs are calling for a New International Economic Order (NIEO). For LDCs, this would involve:
  - a greater voice in the policies of international financial institutions
  - preferential tariff treatment
  - a greater share of the income derived from contracts and leases negotiated with multinational corporations
  - improved terms of trade
  - the cancellation or rescheduling of external debts
  - a larger and automatic inflow of foreign aid.

SUMMARY

1. The central feature associated with a comparison of the world's economies is the disparity in both incomes per capita and growth rates in income per capita that exists between nations. On the basis of income per capita we can divide countries according to their incomes into industrially advanced countries (IACs) and less developed countries (LDCs).

2. Most nations of the world are developing—or less developed—nations (low per capita incomes). While some have achieved fairly rapid growth, others have little or none at all. Data show that 80 per cent of the world's output is produced by only 16 per cent of the world's population. These people reside in the IACs.

3. Initial scarcities of natural resources and the limited possibility of augmenting existing supplies may impose a rigid limitation on a nation's capacity to develop.

4. The presence of large populations in the LDCs contributes to low per capita incomes. In particular, increases in per capita incomes frequently induce rapid population growth, to the end that per capita incomes again fall back to near-subsistence levels.

5. While the traditional view has been that most LDCs have substantial disguised unemployment in the form of surplus agricultural labour, more recent analysis suggests that rural–urban migration has generated high unemployment rates in the cities of LDCs.

6. In the LDCs both the saving and investment aspects of the capital-formation process are impeded by formidable obstacles. The absence of a vigorous entrepreneurial class and the weakness of investment incentives are the major obstacles to capital accumulation when money capital is readily available. Political and social instability, the lack of large domestic markets, shortages of operating and administrative personnel and deficiencies of basic social capital all contribute to an uninviting environment for private investment. Some degree of capital accumulation can usually be achieved, however, through non-financial investment.

7. Appropriate social and institutional changes and, in particular, the presence of 'the will to develop' are essential ingredients in economic development.

8. The concept of the vicious circle of underdevelopment brings together many of the obstacles to growth and says in effect that 'poor countries are poor because of their poverty'. Low incomes inhibit saving and the accumulation of real and human capital, making it difficult to increase productivity and incomes. Rapid population growth can offset otherwise promising attempts to break the vicious circle.

9. The role of government in the development of the LDCs is likely to be considerable. The nature of the obstacles to growth—the absence of an entrepreneurial class, the dearth of social capital, the saving–investment dilemma and the presence of social–institutional obstacles to growth—suggest the need for government action in initiating the growth process.

10. The IACs can assist in the development of the LDCs by reducing trade barriers and by providing both private and public capital.

11 The LDCs are calling for a New International Economic Order (NIEO). For the LDCs, this would involve (a) a greater voice in the policies of international financial institutions; (b) preferential tariff treatment; (c) a greater share of the income derived from contracts and leases negotiated with multinational corporations; (d) improved terms of trade; (e) the cancellation or rescheduling of their external debts; (f) a larger and automatic inflow of foreign aid.

KEY TERMS *and* CONCEPTS *to remember*

basic social capital 573
capital flight 573
capital-using and labour-saving technological advances 575
disguised unemployment 570
entrepreneurial class 570
human capital 570
industrially advanced countries (IACs) 561
land reform 576
LDC debt crisis 582
less developed—or developing—countries (LDCs) 561
neo-colonialism 584
New International Economic Order (NIEO) 584
non-financial investment 574
preferential tariff treatment 585
rapid rural–urban migration 570
rate of capital accumulation 577
terms of trade 585
vicious circle of underdevelopment 576
the 'will to develop' 575
World Bank 581

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What are the major characteristics of a developing nation? Describe each carefully.

2 List the major avenues of economic development available to a developing nation. What key ingredients are needed in the growth process of LDCs? Explain.

3 State and explain the obstacles that face the LDCs in breaking the poverty barrier.

4 Use the 'vicious circle of underdevelopment' to outline in detail the steps that an LDC might take to initiate economic development.

5 Much of the initial investment in an LDC must be devoted to basic social capital that does not directly or immediately lead to a greater production of goods and services. What bearing might this have upon the degree of inflation that results as government finances capital accumulation through the printing and spending of new money?

6 'The nature of the problems faced by the LDCs creates a bias in favour of a governmentally directed, rather than a decentralised, development process.' Do you agree? Substantiate your position.

7 What is the LDC debt crisis? How did it come about?

8 Outline the main components of the New International Economic Order (NIEO) proposed by the LDCs. Which of these demands do you feel are most justified?



1 Look at the data in Tables 17.1 and 17.4. Calculate land area per capita for each region. Graph this against income per capita. Now graph income per capita growth against population growth. What would you conclude from an analysis of these data?

2 Assume an underdeveloped country saves and invests 16 per cent of its national income each year and that its capital–output ratio is 4. What does this mean for the growth of per capita incomes if population is increasing by 6 per cent per year? By 4 per cent per year? By 1 per cent per year? What, if anything, does this example suggest with respect to growth policies?

3 What would be the implications of a worldwide policy of unrestricted immigration between nations for economic efficiency and the global distribution of income? Use a supply and demand analysis to explain.



1 Which were the 10 countries in the world with the lowest incomes per capita in 1997? Which were the 10 countries with the highest incomes per capita in 1997? To find out, visit the World Bank website at:
http://www.worldbank.org/

Follow the site map so that you can look at the data given in the World Development Indicators tables. List each country. What other key features would you examine in assessing these countries' positions? Explain.

2 What are the social dimensions of development? You will also find these at the World Bank website. List each and explain its role in the development process.

3 Discuss and evaluate the following statements:

(a) 'The path to economic development has been clearly blazed by Australian capitalism. It is only for the LDCs to follow this trail.' What advantages has Australia had that may not be possessed by many of these developing nations? Explain.

(b) 'Economic inequality is conducive to saving, and saving is the prerequisite of investment. Therefore, greater inequality in the income distribution of the LDCs would be a spur to capital accumulation and growth.' In what way may the small domestic markets of many of the LDCs suggest that this proposition is incorrect?

(c) 'The spirit of nationalism sometimes aids and sometimes impedes the process of economic growth.'

(d) 'The advanced economies fear the complications that stem from oversaving; the LDCs bear the yoke of undersaving.' Is this statement true in Australia's case?

(e) 'The core of the development process involves changing human beings more than it does altering a nation's physical environment.'

(f) 'Our "foreign aid" program is a sham. In reality it represents neo-colonialism—a means by which the LDCs can be nominally free in a political sense but remain totally subservient in an economic sense.' Visit the Department of Foreign Affairs and Trade and review Australia's aid program. You will find its website at:
http://www.dfat.gov.au/

In what ways may the statement be true with respect to our aid program? In what ways is it not? Do we have a large aid program?

(g) 'Poverty and freedom cannot persist side by side; one must triumph over the other.'

NOTES

1 Michael P. Todaro, *Economic Development in the Third World*, 5th edn, Longman, New York, 1994, p. 4.

2 The interested reader should consult The World Bank, *World Development Report*, Oxford University Press, New York, 1984, ch. 4.

3 International Monetary Fund, *World Economic Outlook*, Washington DC, 1988, p. 76.

4 Inder P. Nijhawan, 'Socio-Political Institutions, Cultural Values, and Attitudes—Their Impact on Indian Economic Development', in J. S. Uppal (ed.), *India's Economic Problems*, Tata McGraw-Hill Publishing Company, New Delhi, 1975, p. 31.

5 ibid., p. 33.

6 You will recall from Chapter 16 that:

$$\text{growth rate} = \frac{\text{average propensity to save}}{\text{capital–output ratio}}$$

Hence, in this case:

$$\frac{0.10}{4} = 0.025, \text{ or } 2.5 \text{ per cent.}$$

7 Derived from R. Pomfret, *Diverse Paths of Economic Development*, Harvester Wheatsheaf, Great Britain, 1992, p. 145, Table 12.1.

8 International Monetary Fund, *World Economic Outlook*, Washington DC, October 1999.

9 This section draws upon Edwin P. Reubens (ed.), *The Challenge of the New International Economic Order*, Westview Press, Boulder, Colorado, 1981, ch. 1; and Todaro, *Economic Development in the Third World*. For a detailed statement on the NIEO, see Mahbub ul Haq, *The Third World and the International Economic Order*, Overseas Development Council, Washington DC, 1976.

10 The term 'New International Economic Order' arose from a 1974 United Nations declaration on the problem of economic development.

11 *North-South: A Program for Survival*, MIT Press, Cambridge, Mass., 1980. This commission, which studied a far-ranging agenda of international economic issues, was chaired by Willy Brandt, former Chancellor of West Germany.

A LAST WORD CHINA: WHATEVER IT IS, WE CAN'T AFFORD IT

The exact nature of the role of government in promoting and ensuring economic growth in the poorer nations is still a controversial one. Perhaps we can learn something of this from China's experiences with its use of state-owned enterprises and the current consequences of this involvement for China's economic development and growth.

From the government's point of view, the cost of state-owned enterprises is unsustainable. That lesson was learnt after the economic boom of the early 1990s when an indiscriminate lunge for economic growth was urged on China by an ancient Deng Xiaoping to put the trauma of the 1989 Tiananmen crackdown behind it. Investment soared, but much was wasted. Paddy fields were smothered with concrete and declared 'economic zones'. Luxury buildings went up for which there were no customers. State enterprises produced larger quantities of goods that no one wanted. The banks printed money, making inflation soar to a peak of 28 per cent in 1994. But government finances remained in a parlous state.

Much of the government's economic policy since has been designed to avoid a recurrence of the inflation nightmare. Like Germany, which has never forgotten the hyperinflation it suffered after the First World War, China too has collective memories of runaway prices, in its case in the late 1940s. Indeed, the casual handling of inflation by the Kuomintang, the nationalist opponents of the Communists in the civil war, helped bring the Communists to power in 1949. Half a century on, it can be argued that Zhu Rongji and his economic team tamed inflation rather too brutally. For the past two years prices have been falling, though the worst now seems over.

Yet China's inflation was a bigger threat to future prosperity than its deflation, and two institutional changes have put the government in a sounder position to prevent its reappearance. The first is an overhaul of the tax system in 1994, which for the first time gave the central government first grab of the revenues collected in the provinces. In many ways, a government measures its authority by its ability to tax and spend. Yet the government in Beijing seemed incapable of collecting an adequate amount, with annual revenue equivalent to a mere 11 per cent of GDP (compared with, say, 31 per cent for America). The figure has now crept up to just over 13 per cent, a slow step in the right direction.

The second move will perhaps prove the more important: a restructuring of the banking system that prevents state enterprises getting easy money. China's central bank, the People's Bank of China, was organised along the same lines as other central government agencies, which meant that nearly every level of government across China had its own central-bank branch. This was usually answerable to the local party barons, so it often became the piggy bank for their pet projects.

That has now changed, because the central bank has been reshaped into nine regional branches. The rearrangement cuts across local party lines, and allows the People's Bank to better monitor the branches of the four state banks, which also faced pressure to supply credit to inefficient local state enterprises. One Beijing executive of a state bank tells the story of a meeting he had with his counterpart at a provincial branch, along with the provincial governor. He found the two of them sitting next to each other and opposite him.

Squeezing the banks

The central government is now taking the legacy of socialism—1.2 trillion yuan of bad loans—off the state banks' books. In return, the banks are under intense moral and financial pressure to behave more commercially. In January, the governor of the People's Bank, Dai Xianglong, an ally of Zhu Rongji, told the state banks that they had had their last dinner. That means the state enterprises have had theirs too.

The loans are being put into 'asset-management companies' that are supposed to restructure, repackage and sell the loans over a period of ten years. The government hopes it can recover almost one-third of the loans that have gone sour. That seems wishful thinking, particularly since no proper market exists for selling these assets. One day there will have to be a reckoning.

Nicholas Lardy of the Brookings Institution in Washington, DC, does a back-of-the-envelope balance sheet of the Chinese government's finances. On the liability side, there is the government's

outstanding debt, equal to 20 per cent of GDP if treasury debt is taken into account, as well as the debt forced on the four state banks to finance the government's non-commercial lending by 'policy' banks. Next, there are the state banks' non-performing loans. The government has acknowledged 1.2 trillion yuan of them, equivalent to 15 per cent of GDP. Mr Lardy reckons the real figure, including bad loans elsewhere in the system, may be about double that. Then comes a huge future bill for urban workers' pensions, the responsibility for which is being shifted from state enterprises to government—say 50 per cent of GDP. In all, the government's liabilities are around 100 per cent of GDP.

What of the asset side of the balance sheet? Some economists think there is much that can be privatised, but caution is in order. For a start, there are still intense ideological objections to selling control of the country's 'strategic assets' in telecoms, energy and transport. And what are they worth anyway? PetroChina is seeking to float a minority stake on the New York Stock Exchange, but fund managers initially were not keen on the idea. After all, a big chunk of the money raised is meant to go on paying pensioners, whereas western institutions like to see their money being put to more productive purposes. True, the $3 billion listing of China Telecom caused much fanfare in Hong Kong over two years ago, and its shares have since soared. But that, for once, is a company in a growing, forward-looking business, without a pensions legacy, and with a near-monopoly. The notion of selling China's under-invested railroads and urban-transport networks, says one western economist, is a 'pipedream'. That leaves China's annual tax revenues (13 per cent of GDP, of which nearly one-fifth goes on paying interest on government debt) as the main asset.

If the government can prevent the state banks from making any new bad loans, says Mr Lardy, and if tax revenues continue to rise by 0.6 percentage points of GDP a year, as they have recently been doing, then the central government may well get out of its fix. Government debt will peak at 60–70 per cent of GDP, a high but still manageable level. But should bad loans increase or tax revenues fail to go on rising, the debt ratio will spiral out of control.

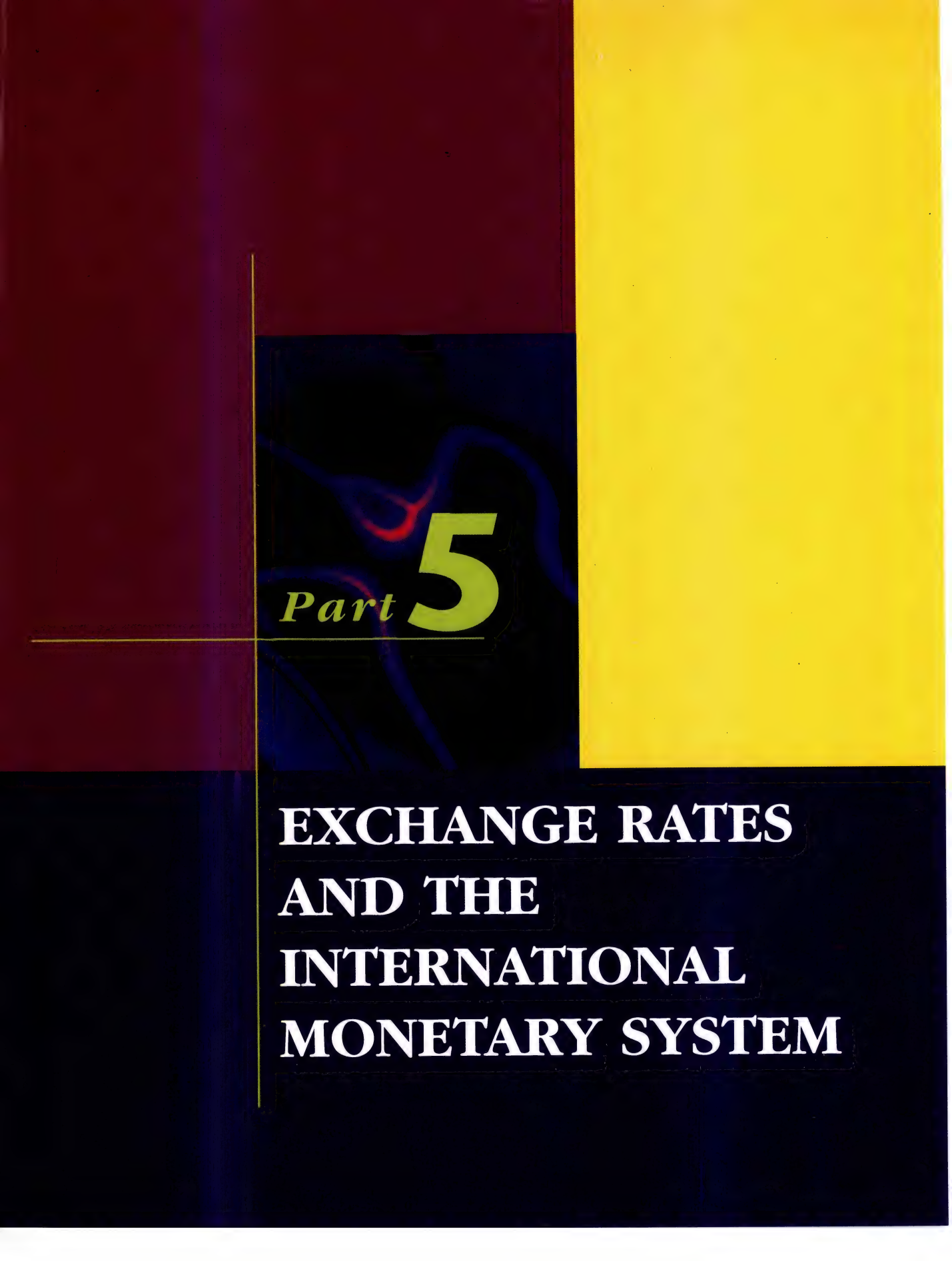
SOURCE: Dominic Ziegler, Economist, *8 April 2000.*

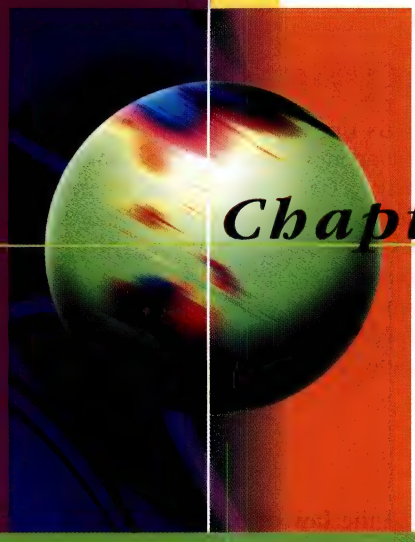
Questions

1 What problems have emerged from China's state ownership and control of many of its largest businesses? Describe these problems in detail, and their implications for the promotion of economic development in China.

2 What does Ziegler suggest China's government should ensure if it is to play a significant role in promoting economic development? As you examine the issues, describe the institutional arrangements required for a positive government role to be achieved.

3 Is privatisation of government enterprise a part of the full solution to China's current development problems? Explain. What dangers may exist if privatisation is undertaken too rapidly?


Part 5
EXCHANGE RATES AND THE INTERNATIONAL MONETARY SYSTEM



Chapter 18 MODELS OF THE EXCHANGE RATE

INTRODUCTION

Chapter 3 introduced you to a simple demand and supply model of exchange rate determination and the determinants of the exchange rate. Chapter 4 illustrated the source of some of the transactions that lead to flows of currencies through its discussion of the balance of payments and its constituent accounts. In this chapter we will briefly introduce and examine simplified versions of some of the models that have been developed to explain movements in the value of a country's currency—the **exchange rate**. The major theme is that there is no unique or single theory that can always explain exchange rate behaviour. Additionally, there may be very important differences between the short-run determination and long-run determination of the level of the exchange rate. It is also necessary to recognise the importance of expectations and their potentially destabilising role in exchange rate determination.

LEARNING OBJECTIVES

- **Examine models of the exchange rate—the purchasing power parity approach, asset market (or portfolio balance) approach and monetary approach.**
- **Explain the Fisher and international Fisher equations and their importance in linking short-run and long-run exchange rate behaviour.**
- **Integrate long-run and short-run descriptions of exchange rate behaviour into a simple model of overshooting exchange rates.**

One thing that you will notice is that most of these models essentially focus on the financial aspect of exchange rate determination. The flows approach, which looks at the supply and demand for a country's currency in terms of the demand for imports and exports, is only indirectly important in a few of these models—the purchasing power parity approach and the monetary approach.

Another thing that you will notice in this chapter is the presence of some equations—pieces of simple algebra. These should not worry you, as they are just a shorthand way of adequately capturing some of the central ideas—a convenience rather than a nuisance.

PURCHASING POWER PARITY (PPP)

Purchasing power parity (PPP): suggests that the purchasing power of different currencies should be the same when converted to a common currency value through the exchange rate.

Purchasing power parity (PPP) models focus on the product markets of the economy, and relative price levels in different economies as the determinant of the exchange rate between countries. Clearly, as we know from Chapter 3, relative prices are a key determinant of the demand for exports and imports and hence for foreign exchange. PPP suggests that the purchasing power of currencies, when converted through the exchange rate between the currencies, should be identical or very close; that is, when adjusted for the difference in the relative value of currencies as expressed through the exchange rate, you should be able to purchase an equivalent amount of goods and services with each of the currencies.

ABSOLUTE PPP

Law of one price: when converted to a common currency value through the exchange rate, the price of identical goods should be the same across national boundaries.

Exchange rate: the price of one currency expressed in units of another currency.

In their simplest form, PPP models assume that the **law of one price** holds; that is, for any given good or common basket of goods, the domestic price must equal the exchange rate times the foreign price:

$$P_d = E \times P_{o/s}$$

Here P_d and $P_{o/s}$ are indices of the domestic and foreign price levels, respectively, of the common basket, and E is the exchange rate measured in units of domestic currency per unit of foreign currency. If the law of one price did not hold, it is asserted, there would be potential to move goods across national boundaries to take advantage of price differences. This would lead to a process of arbitrage in prices, enforcing one 'price' across national boundaries.

More generally, PPP can also be viewed as asserting that the value of the exchange rate reflects the ratio of the prices in each currency of a common good or basket of goods, that is:

$$\frac{P_d}{P_{o/s}} = E$$

This is an extreme form of the PPP type of model, known as **absolute PPP**. Based on the above, absolute PPP models would assert that changes in the exchange rate simply reflect nominal changes in price levels in each of the two associated countries.

PROBLEMS WITH ABSOLUTE PPP

There are a number of problems with this simple model. In particular, we need to note that it does not account for:

1. the presence of non-traded goods and services, which influence the levels of the cost of a standard basket of goods, P_d and $P_{o/s}$—for example, electricity
2. product differentiation in terms of differences in the characteristics and quality of products sold in different countries
3. differences in consumption patterns and preferences across countries—the baskets of goods are not comparable
4. transportation costs between countries, some of which may be so large relative to the value of the product as to discourage international trade in it—think of large-scale exports of hairdressing services
5. tariffs and other forms of industry assistance that distort relative prices between nations

6 the possibility of relative price changes of goods and services in each country due to differences in market structure and in the growth of productivity across different industry sectors within each country.

In addition, the simple PPP model neglects non-goods factors that might lead to changes in the level of the exchange rate, such as differences in interest rates, economic growth and economic policy. These suggest that the model is too simplistic to provide much of an explanation of exchange rates or their movements. However, by relaxing a few assumptions we can develop a more useful model—that of relative PPP.

RELATIVE PPP

We know from our simple analysis of exchange rates in Chapter 3 that relative price level movements are important in the demand for and supply of foreign exchange; that is, relative prices are a determinant of exchange rates. A less restrictive version of the PPP model looks at the importance of relative price changes—in the form of relative inflation rates—as a major determinant of the exchange rate:

$$\frac{\Delta E}{E} \cong \frac{\Delta P_d}{P_d} - \frac{\Delta P_{o/s}}{P_{o/s}}$$

Here ≅ means 'is approximately equal to', while Δ means 'change in'. Additionally, relative PPP assumes that although the law of one price held at some stage in the past, it need not hold in any particular period.

Under **relative PPP**, relative inflation rates determine whether the currency appreciates (a decrease in E) or depreciates (an increase in E) This is, of course, consistent with our discussion of the role of relative prices in Chapter 3, and the impact of inflation on a nation's competitiveness and the demand for its exports and its demand for imports. A higher rate of inflation than that of a country's trading partners will erode its competitiveness. This will cause a fall in demand for its currency, due to the fall in the demand for its exports, and an increase in the supply of its currency, due to an increase in the demand for imports. A depreciation of the currency is the result.

EVALUATING RELATIVE PPP

Often it is assumed that PPP holds better in the long run than in the short run. This is because in the short run the exchange rate may change to reflect information about expected future price changes; it changes in advance of the actual date at which the price change occurs. Additionally we need to recognise that changes in P_d and $P_{o/s}$ are due to changes in the product market, which adjusts more slowly than financial markets. Figure 18.1 provides data against which to evaluate this proposition. Here we have plotted the differential in the inflation rates of Australia and the United States against the value of the Australian dollar measured in US dollars. In the short term, as Figure 18.1 illustrates, the relationship between relative inflation rates and movements in the level of the exchange rate appears not to hold very well. Deviations from relative PPP would seem to be large and related to other factors that influence the exchange rate. At best, PPP perhaps holds in a general sense in the long run, a period over which there is sufficient time to respond to imbalances in the real economy.

The apparent lack of short-run support in the data for the relative PPP model should not come as too great a surprise. The relative PPP model shares many of the weaknesses of absolute PPP, especially its failure to consider relative growth rates between economies, product differentiation, consumption patterns and the impact of government policy on the value of the exchange rate.

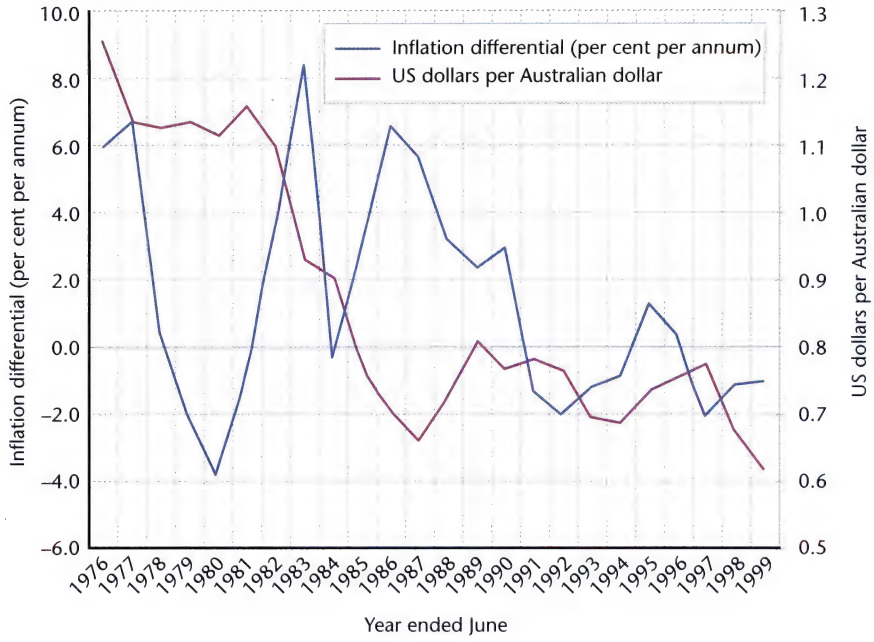
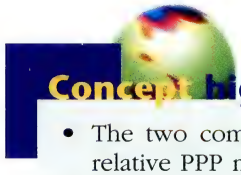


FIGURE 18.1
Australian and US inflation rates and the value of the Australian dollar (US dollars per Australian dollar), 1975–76 to 1998–99

Over the longer term, it can perhaps be asserted that PPP holds in some fashion. However, in the short and medium terms, movements away from PPP can be substantial and are clearly driven by non-price-level factors.

SOURCE: Reserve Bank of Australia, Bulletin, *various issues.*



Concept highlights

- The two common forms of the purchasing power parity (PPP) approach are the absolute and relative PPP models.
- The absolute PPP model suggests that the law of one price holds, due to the presence of arbitrage processes, and that the exchange rate is nothing more than the ratio of the price levels of a common basket of goods expressed in each currency.
- The relative PPP model focuses on the importance of relative inflation rates as a determinant of the exchange rate. It suggests that if the rate of inflation in the domestic economy exceeds (or is exceeded by) that of the foreign country, the currency will depreciate (or appreciate) in line with the inflation differential.
- Evidence in favour of the relative PPP model is weak, and it appears to be a better approximation in the long run than in the short run.

ASSET MARKET MODELS

Looking at the range of financial assets available to individuals, we can see that money is only one of the forms of financial asset in which wealth can be held. A multitude of other forms for holding wealth exist—stocks, bonds, property, precious metals, art, and so on. Interest rates and the other returns available on these different assets are reflected in the opportunity cost of holding money in an investor's portfolio (see Chapters 10 and 12). Changes in relative interest rates and returns will lead to investors wishing to rearrange their portfolios—the mix of assets they hold. This applies also to the allocations that investors make between holdings of domestic and foreign assets. Indeed, relative interest rates were suggested as a determinant of the exchange rate as discussed in Chapter 3.

Global SNAPSHOT WHITHER PPP?



The relationship between the level of the exchange rate and relative inflation rates is thought to hold more closely in the long run than in the short run. Here we present data on the level of the CPI and the exchange rate for the years ending June from 1989 to 1999.

	CPI (1995 = 100)				
Year	Australia	United States	Japan	New Zealand	Singapore
1988–89	81.93	81.4	91.1	83.6	85.4
1989–90	88.21	85.2	93.2	90.0	87.8
1990–91	91.22	89.2	96.4	92.5	91.2
1991–92	92.34	92.0	98.6	93.4	93.2
1992–93	94.06	94.8	99.4	94.6	95.2
1993–94	95.70	97.1	100.0	95.6	98.5
1994–95	100.00	100.1	100.2	100.0	100.3
1995–96	103.10	102.8	100.2	102.0	101.5
1996–97	103.44	105.2	102.4	103.1	103.2
1997–98	104.13	107.0	102.5	104.9	103.0
1998–99	105.25	109.1	102.2	104.5	103.6

	Exchange rate (units of currency per Australian dollar)			
Year	United States dollar	Japanese yen	New Zealand dollar	Singapore dollar
1988–89	0.7553	108.79	1.3159	1.4842
1989–90	0.7890	120.41	1.3439	1.4515
1990–91	0.7681	106.19	1.3303	1.3576
1991–92	0.7488	94.05	1.3752	1.2112
1992–93	0.6722	71.54	1.2478	1.0919
1993–94	0.7291	72.20	1.2258	1.1114
1994–95	0.7086	60.08	1.0621	0.9898
1995–96	0.789	86.48	1.1552	1.1123
1996–97	0.7455	85.20	1.0996	1.0662
1997–98	0.6135	86.16	1.1931	1.0477
1998–99	0.6596	79.66	1.2466	1.1224

SOURCE: Reserve Bank of Australia, Bulletin, *various issues.*

Questions

1. Calculate the average annual rate of inflation in each country. In which country has it been highest? In which country has it been lowest?
2. Calculate the average annual rate of change in the level of the exchange rate against the Australian dollar for each of the currencies given. In which country has the appreciation of the currency been greatest? In which country has the depreciation of the currency been greatest?
3. Calculate the relative inflation differential between each country and Australia. Graph this against the rate change in the relevant exchange rate. Does purchasing power parity appear to hold over the longer term? Explain.
4. Graph the relative inflation differential between each country and Australia against the level of the relevant exchange rate. Does purchasing power parity appear to hold over the longer term? Explain.

EXCHANGE RATE RISK AND RETURNS ON FOREIGN INVESTMENT

Clearly, interest rate and return differentials across countries are not the only factors that international investors need to consider. One complication is that exchange rate risk is also present with any foreign investment; that is, when converted back to the investor's working currency—for example, Hong Kong, Australian, Singapore or US dollars—the investor's returns comprise a combination of both the foreign currency return on the assets ($r_{o/s}$) and changes that have occurred in the value of the exchange rate over the investment period:

$$\text{actual domestic currency return} = r_{o/s} - \frac{\Delta E}{E}$$

Thus if the domestic currency appreciates (E increases), the return on foreign investments will be reduced.

Portfolio balance approach (PBA): looks at changes in exchange rates resulting from shifts in investors' international holdings of assets. These shifts occur in response to changes in the relative real returns, both available and expected, on assets in each country.

Shifts in international flows of investment funds may be expected to have a significant impact on exchange rates. This would result from investors with internationally mobile funds changing the country mix of the assets in their portfolios—and hence their demands for and supplies of currencies. For this reason the **asset market approach (AMA)** to exchange rate determination is often called the **portfolio balance approach (PBA)**. These exchange rate models thus focus our attention on the relationship that exists between investment in financial markets (and changes in the pattern of these investments) and changes in the exchange rate.

OTHER MARKET FACTORS

Apart from the obvious logic of the portfolio balance approach, there are a number of good reasons that suggest a focus on the role of financial markets in determining the value of the exchange rate. The first is that adjustment to change is usually less costly in financial markets—transaction costs are usually only a small fraction of the value of the asset exchanged, especially in the bond and stock markets. This allows for more complete arbitrage to occur than would happen in goods markets, where adjustment costs are often high relative to the gains from adjustment.

The second factor is the relative size of money flows associated with financial transactions relative to those associated with goods transactions. For example, during 1998–99 the Reserve Bank of Australia (RBA) recorded that the average value of foreign currency transactions against the Australian dollar was about $42.1 billion per day. Given that there are about 250 business days per year, this suggests that turnover against the Australian dollar was somewhere in the order of magnitude of $10 518.5 billion during 1998–99. This was about 18 times the value of GDP and 94 times the value of exports of goods and services in the same year.

INTEREST ARBITRAGE

The relationship postulated between returns in asset markets and exchange rates is known as **uncovered interest arbitrage**; that is, the expected return to holding interest-bearing (or return-yielding) assets will tend to be equalised across different nations. At equilibrium, differences in money interest rates (or rates of return on assets) will be reflected in differences between the expected future exchange rate and the current (or spot) exchange rate. Thus the expected return from holding domestic assets (r_d*) must be approximately equal to the expected return from

holding foreign assets ($r_{o/s}^*$) less an adjustment for expected changes in the value of the exchange rate ($\frac{\Delta E^*}{E}$); the symbol * indicates expectations. Thus:

$$r_d^* \cong r_{o/s}^* - \frac{\Delta E^*}{E}$$

Note here the emphasis on expectations, another of the determinants of the exchange rate described in Chapter 3.

ROLE OF EXPECTATIONS

Investors, by nature, must make many of their decisions on the basis of expectations about the future. Expectations may be formed in a number of ways, including the adaptive expectations approach (Chapter 14) or the rational expectations approach (Chapter 13). Let us assume that the only sort of uncertainty faced by investors is related to the exchange rate, due to their investment in bonds with known interest yields. What sort of expectations, we may ask, would influence investors' expectations and behaviour with respect to the exchange rate?

The value of the expected future exchange rate will be based on various factors associated with the financial markets, including those suggested in Chapter 3. Examples of these factors would include:

- relative inflation rates and expectations about relative inflation rates in the future
- relative growth rates and expectations about relative future growth rates
- expectations of changes in relative interest rates
- expectations about government intervention in the foreign exchange market
- other risks associated with the currency, such as the trade pattern or composition of exports, the current account balance relative to GDP, and net foreign debt relative to GDP.

What, we may ask, will be the impact of changes in these expectations? If the expectation arises that the domestic currency's exchange rate will depreciate in the future, then investors will realise that—other factors held constant—they will generate lower returns from holding domestic as opposed to foreign assets. Investors will thus seek to move out of holding domestic assets and into foreign assets. The demand for foreign exchange will increase, while its supply will decrease. The result? A depreciation in the level of the current exchange rate. In this sense, exchange rate expectations—in the absence of intervention in the foreign exchange markets—may be largely self-fulfilling.

ROLE OF INTEREST RATE CHANGES

As we have already discussed, PBA models also focus on the role of interest rates in determining the current and future level of the exchange rate. Let us now examine the impact of changes in interest rates within this framework. Again, we will assume that the investments we are dealing with take the form of bonds with given interest yields.

The relationship between returns on foreign and domestic investments takes the following form:

$$r_d \cong r_{o/s} - \frac{\Delta E^*}{E}$$

Now suppose that the central bank undertakes an easy monetary policy so as to reduce interest rates generally throughout the economy (see Chapter 12).

What is the impact within our PBA framework? Firstly, we should note that to maintain the relationship suggested in the previous equation, a fall in r_d requires an increase in the size of $\frac{\Delta E^*}{E}$. How is this likely to occur? The simplest way is for the domestic currency to fall in value (depreciation). Is this likely? Given the fall in interest rates on domestic bonds, investors are going to wish to rearrange their portfolios so as to increase their holdings of foreign bonds. The result? An increase in demand for foreign exchange and a fall in the supply of foreign exchange. Depreciation is thus a logical result within this framework.

EVALUATING INTEREST ARBITRAGE

Figure 18.2 provides some information on the relationship between the US–Australia *interest rate differential* and the *spot exchange rate* between the US dollar and Australian dollar. Note that, as with the PPP approach, the correlation between interest rate differentials between countries and changes in the exchange rate is not entirely supported by movements in the data although it appears more apparent for the later years. This is not surprising, given our earlier discussion of the role of expectations in the exchange rate process.

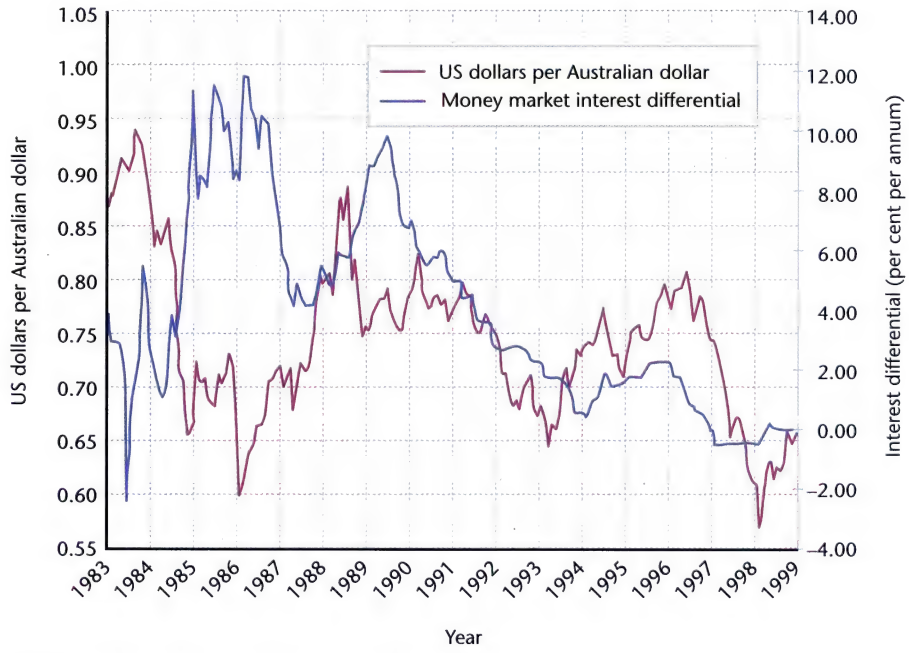


FIGURE 18.2
Australian and US short-term interest rates and the value of the Australian dollar (US dollars per Australian dollar), 1982–83 to 1998–99

Although differentials in short-term interest rates appear to have some influence over movements in the exchange rate, they cannot be considered to be a dominant factor.

SOURCE: Reserve Bank of Australia, Bulletin, *various issues.*

ADJUSTMENTS TO THE EXPECTED FUTURE EXCHANGE RATE

In evaluating the portfolio balance approach, we should note that not all exchange rate adjustments need to fall on the spot exchange rate. Indeed, as would be suggested by a monetary approach to the exchange rate (see pp. 604–607 in this chapter), we would adjust our expectations of the future value of the exchange rate in line with expectations of inflation, perhaps using a PPP style of framework.

Business IMPLICATION

EXPECTATIONS AND EXCHANGE RATES



The role of expectations in exchange rate dynamics cannot be overlooked when we consider where the exchange rate between two currencies is going. Indeed, expectations can be self-fulfilling, with expectations of appreciation of the currency leading to appreciation, and expectations of depreciation of the currency leading to depreciation. The demand for and supply of a particular currency will shift in response to changes in expectations about key variables, such as relative inflation rates, and shifts in relative interest rates and in relative rates of economic growth.

However, these are not the only variables for which expectations are important to the value of the exchange rate. There may also be expectations that business will be nationalised, that the government will print excessive amounts of money to fund its expenditures, that the currency will depreciate or be devalued, and that relative asset returns in the country will fall substantially. The implication: you can't ignore expectations. Strongly held beliefs in each of the events listed above will be a weakness in the currency, as investors and traders attempt to move their funds to protect their value. Capital flight—the mass exodus of investment funds and savings from a country—of the sort seen from Thailand and Indonesia during the Asian crisis provides an extreme example of the impact that negative expectations may hold for a currency and the asset markets in its country.

INTEREST ARBITRAGE AND SPECIFIC RISK

The relationship between the left-hand side and the right-hand side of our interest arbitrage equations can hold only where assets in each country are perfect substitutes, and where it is assumed that all risk, etc. is embodied in the expected future value of the exchange rate. A full PBA model will assume that assets in different countries are not perfect substitutes. This means that even when adjusted for expected changes in the value of the currency, interest rates and returns on assets in different countries do not have to be equal; that is, some risk premium may be placed on the holding of assets in the foreign country. Thus we get this sort of arrangement, with σ being the measure of the premium placed on having assets in the foreign country:

$$r_d \cong r_{o/s} - \frac{\Delta E^*}{E} + \sigma$$

Clearly even if the exchange rate were expected to stay constant, there could still be some differential in the return on investments in different countries due to the risk premium associated with each. This risk premium (σ) will itself change over time and reflect such things as the liquidity of financial markets in the specific country referred to, the quality of its government and government policy, general business conditions associated with the business cycle, and so on.

OTHER PROBLEMS

There are a number of other problems with the portfolio balance approach. In particular, it ignores:

- transactions costs, including bank margins and withholding taxes on investment funds returned overseas
- taxation differentials between nations and expected changes to tax regimes
- the presence of covered interest parity over the short term in countries with a well-developed set of forward markets, which ensures that interest rates, spot exchange rates and forward exchange rates are closely linked

- government controls, such as intervention in the market and fixing of the exchange rate
- time lags in the decision-making process and in actuating planned changes in portfolio holdings in response to changes in the investment environment.

Based on the above, we should not expect the portfolio balance approach to exchange rate determination to perform much better than the PPP approach. The important thing to remember, however, is that it does give us insights into factors that may affect the exchange rate. How we use and interpret these is part of the skill of economic analysis.



Concept highlights

- Portfolio balance models suggest that changes in exchange rates are the result of shifts in investors' international holdings of assets. These shifts occur in response to changes in relativities between the actual and expected rates of real returns available in each country.
- A fall in the domestic interest rate generates pressures for investors to rebalance their portfolios towards foreign assets. This leads to an increase in the demand for foreign exchange and a fall in its supply, and thus a depreciation of the domestic currency.
- Expectations also play a central role within PBA models. Expectations of changes that will lead to a depreciation of the exchange rate will be largely self-reinforcing as investors attempt to change their portfolios in light of the revised expectations.

THE MONETARY APPROACH

Monetary approach to the exchange rate: looks at the relationship between the domestic money supply, the domestic demand for money, and the exchange rate.

The **monetary approach** to exchange rate determination looks at the relationship that exists between the domestic money supply, the domestic demand for money, and the exchange rate. It is built up around the following framework, which you should be broadly familiar with from your study of Chapters 10 to 13.

MONEY SUPPLY

We start with a definition of the money supply (M):

$$M = R + D$$

Here R is foreign reserves, an important component of the RBA's balance sheet (Chapter 12), and D is domestic credit. Note that it is assumed in the monetary approach that the RBA can target the money supply and that interest rates will be allowed to find their own level.

MONEY DEMAND

The next step is to assume a form for the demand-for-money equation (L). Note, however, that this is not quite of the type outlined in Chapter 10. As suggested in Chapter 13, monetarists place little emphasis on the asset demand for money,

suggesting that the velocity of money (V) is essentially stable. Thus our demand-for-money curve is simply a restatement of the *quantity equation* that relates the demand for money to the nominal level of GDP ($P_d \times Y$), Y being real GDP, and the inverse of the velocity of money ($k = \frac{1}{V}$):

$$L = k \times P_d \times Y$$

THE ADDITION OF PPP

The next step used in the monetary approach is to assert that absolute PPP holds in practice ($P_d = E \times P_{o/s}$), allowing us to express the domestic demand for money in terms of the exchange rate and foreign price level:

$$L = k \times E \times P_{o/s} \times Y$$

The usual money market equilibrium is:

$$L = M$$

So:

$$R + D = k \times E \times P_{o/s} \times Y$$

Taking a very rough approximation by percentage changes to the above (due to the presence of the addition sign on the left-hand side of the equation) and rearranging slightly, we arrive at the following:

$$\frac{\Delta E}{E} \cong \frac{\Delta R}{R} + \frac{\Delta D}{D} - \frac{\Delta P_{o/s}}{P_{o/s}} - \frac{\Delta Y}{Y}$$

RESULTS OF THE MONETARY APPROACH

To make any real sense of our expression for exchange rate changes, we have to assume that at any one time we have only one of the variables on the right-hand side of the equation changing; changes in all other variables are set equal to zero. If this is the case, we can, under the assumptions of the monetary approach, say the following:

1. If foreign prices are increased, holding domestic prices constant, then the exchange rate appreciates.
2. If domestic income grows, assuming incomes in the rest of the world remain constant, the exchange rate will appreciate. This is a result that you will find counter-intuitive at first. The thing to remember, however, is that we are looking at a *monetary equilibrium*. By our above model's structure, P_d must have fallen so as to maintain money market equilibrium. A higher level of real income requires the price level to fall so as to maintain money market equilibrium because the money stock, rather than the interest rate, is held constant.
3. If domestic credit is increased, then the exchange rate depreciates.

A change in R has not been examined so far. This is because under a perfectly flexible exchange rate system, the central bank does not intervene in the foreign exchange market to influence E. (This fact also provides us with some justification for the use of our rough mathematical approximation.) Where the central bank does intervene, exchange rate changes will also be a function of R and the other changes in the system as just outlined.

Asian FOCUS — MONETARY GROWTH AND EXCHANGE RATES

The monetary approach to exchange rate determination suggests that those countries with the fastest rate of growth in their money supplies will see the greatest fall in the value of their currencies. Here we provide you with an opportunity to consider the relevance of the monetary approach within the Asia–Pacific region.

Country	Annual percentage growth of M_2, 1997	Change in exchange rate against US$, 1997 (%)
Australia	7.3	22.0
Japan	3.1	12.0
New Zealand	4.7	21.4
China, mainland	20.7	–0.2
China, Hong Kong SAR	60.9	0.1
India	17.7	9.3
Indonesia	25.2	100.8
Korea	14.1	53.9
Malaysia	17.5	9.8
Philippines	26.1	52.1
Singapore	10.3	19.7
Thailand	16.5	84.5

SOURCE: Growth of M_2 *from World Bank,* 1999 World Development Indicators*; data on exchange rates derived from International Monetary Fund,* International Financial Statistics*, December 1999.*

Questions

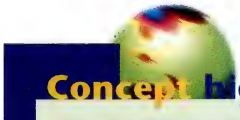
1. Plot the rate of growth in the money supply against the rate of change in the value of the exchange rate (cost of a US dollar). Does there appear to be a relationship between these two variables? Explain.
2. Are there obvious exceptions to any relationship that you observed in question 1? What reasons might you provide for these exceptions? Explain.
3. Is the monetary approach supported by these data? Explain the reasoning behind your answer.

SUPPORT FOR THE MONETARY MODEL

The monetary model is not supported strongly by empirical evidence and really provides only a few useful ideas with which to build a more realistic model. As you will recall from Chapter 13, the velocity of demand for money does not appear to be particularly stable—a key assumption of the monetary approach. Also, the RBA does not control the money supply, but rather focuses on the cash rate and shorter-term interest rates.

Clearly the changes outlined under the monetary model will not be instantaneous in all markets. Where prices are sticky, adjustment in the goods markets will occur only over the longer term. It should also be apparent from our earlier discussion of PPP that strict PPP need not hold. This is because changes in Y and D can have an impact on E separate to the price level. Of course, monetarists assume that the economy remains at or near to full employment, so variations in Y will be negligible (Chapter 13).

Perhaps the most significant result we can take from the analysis of the monetary model is the importance of the supply of an asset—in this case money—on the returns on that asset and hence, potentially, on the value of the exchange rate.



Concept highlights

- The monetary approach to exchange rate determination looks at the relationship between the *domestic money supply*, which is assumed to be under the control of the central bank, the *demand for money*, which is purely a function of the transaction demand, and the *exchange rate*. The relationship between prices and the exchange rate assumed in the model takes the form of purchasing power parity (PPP).
- Under the assumptions of the monetary approach, the following are observed:
  - If foreign prices are increased, holding domestic prices constant, then the exchange rate appreciates.
  - If domestic income grows, assuming incomes in the rest of the world remain constant, the exchange rate appreciates.
  - Importantly to monetarists, if domestic credit is increased, then the exchange rate depreciates.

Business IMPLICATION

WHAT DRIVES THE EXCHANGE RATE?



Many and varied factors drive the level of, and changes in, the exchange rate between currency pairs. Witness the range of models that have been developed to 'explain' movements in the exchange rate: the balance of payments approach, the monetary model, and the purchasing power parity and asset market models. Given that none of these models can be said to adequately describe how and why the exchange rate moves as it does, what lessons may we learn from them? Businesses that need to work out where the exchange rate is going need to develop a list of the 'usual suspects'—key variables that may affect the exchange rate and that should therefore be monitored.

From the asset market approach we find that interest differentials are important. From the purchasing power parity and the monetary approaches we find that we should look at relative inflation rates and variables that affect expected inflation, such as wages growth, excessive expansion in the supply of money and input prices for manufacturing. From the balance of payments approach we learn that the value of imports and exports is important, so we look, for example, at the terms of trade and commodity prices. The implication: models of the exchange rate may not be perfect, but we can still gain considerable practical insights from them.

INTEGRATING MODELS OF EXCHANGE RATE BEHAVIOUR

We have now looked at a number of simplified models of the exchange rate. Each focuses on a different determinant—or set of determinants—of the exchange rate. An important question to ask is: can we reconcile these apparently different explanations of exchange rate behaviour? The answer, as will be developed in the next section, is: 'to some degree'.

Our objective in trying to integrate PBA and PPP approaches is to explain the apparent overshooting—overadjustment—that often seems to be associated with changes in the exchange rate that occur in response to such things as changes in monetary policy. What we need to recognise in doing this is that the financial markets and the real economy adjust at different rates. Product market prices, as discussed in Chapter 8, adjust slowly in response to most shocks to the economy. Financial markets, however, such as the foreign exchange market, adjust rapidly to new information.

THE FISHER AND INTERNATIONAL FISHER EQUATIONS

Interest rates, exchange rates and inflation rates can all be linked through the **Fisher equation**, where i is the nominal interest rate, ri is the real interest rate, and $\frac{\Delta P^*}{P}$ is the expected inflation rate:

$$i = ri + \frac{\Delta P^*}{P}$$

Based on the Fisher equation, we can link the real return to holding domestic versus foreign assets and generate the **international Fisher equation**:

$$i_d - i_{o/s} = ri_d - ri_{o/s} + \frac{\Delta P_d^*}{P_d} - \frac{\Delta P_{o/s}^*}{P_{o/s}}$$

Where (required) real returns are assumed to be equal across countries, this reduces to:

$$i_d - i_{o/s} = \frac{\Delta P_d^*}{P_d} - \frac{\Delta P_{o/s}^*}{P_{o/s}}$$

That is, the nominal interest rate differential should reflect the differences between countries' expected rates of inflation. This suggests that we can link an examination of interest rates—the dominant factor in our short-term PBA model—to inflation and inflationary expectations, inflation being the dominant factor in our long-term PPP model. The analysis would, of course, need to be modified where real interest rates differ across countries due to differences in the perceived riskiness of investing in a particular country or countries, or due to the presence of influences of monetary policy.

IMPACT OF AN EASING OF MONETARY POLICY

We shall base our discussion on an easing of monetary policy. An easing of monetary policy implies general reductions in the level of interest rates across the economy, in both the cash market—where the RBA conducts its monetary policy—and in the markets for longer-term funds in general (see Chapter 12). This will imply an easing of real interest rates in the short term.

SHORT-RUN IMPACT

In terms of our discussion of the portfolio balance approach to exchange rate determination, we know that a fall in real interest rates in Australia will lead to a reduced desire on the part of international investors to hold Australian assets. They will, as they adjust their asset holdings, achieve two things. The first is that the interest rate on investment assets will tend to rise, partly offsetting the impact and effectiveness of monetary policy. This is due to the impact of asset sales on their yields—they are inversely related. The second impact, and our focus, is that the desire to hold fewer Australian assets will lead to a fall in the demand for,

and an increase in the supply of, our currency. The Australian dollar will depreciate. This is the short-run impact of the easing of monetary policy.

LONG-RUN IMPACT

In the longer term, an easing of monetary policy will have a number of important effects. The first, recalling our discussion of employment theory from Chapter 12, is the increase in investment that will be associated with the lowering of interest rates. The second is the consequent increase in output, employment and incomes. The third is the increase in the general level of prices that will be associated with economic expansion.

As noted in Chapter 12, we can observe a number of feedback effects associated with the use of monetary policy. In particular, economic growth will tend to improve the expected return on investments. This will lead to an increase in demand for investment funds—and investment goods—adding to the increase in economic activity. However, the increase in economic activity will tend to push up real interest rates in the markets for investment funds, as will the desire of investors to be compensated for increases in inflation and expected inflation associated with growth in the economy. Interest rates will generally rise, especially at the longer-term end of the yield curve, offsetting some of the initial easing of monetary policy. Furthermore, as the economy expands, we would expect the RBA, itself, to raise interest rates to prevent excessive inflation.

Exchange rate overshooting: the process by which adjustments in the exchange rate in the short term exceed those consistent with longer-term equilibrium, due to differences in the speed of adjustment between asset market prices and product market prices.

The result of these changes is that investors, seeking to readjust their portfolios to the increase in real interest rates in Australia, will tend to demand greater amounts of the Australian currency. This will offset some—or more than some—of the initial fall in the value of the Australian dollar. Note that the new longer-term level of the exchange rate will depend largely on the differences observed in inflation between Australia and the rest of the world. If the monetary policy has allowed an erosion of relative competitiveness, we will find—as suggested by the PPP models—that the exchange rate will have depreciated over the longer term. We will also have observed **exchange rate overshooting** in the short run, relative to the longer-term equilibrium level associated with activities in the product markets.

IMPLICATIONS FOR AUSTRALIA

Analysis and use of the models discussed here, and reflection on material covered in other chapters of this text, allow us to come to the following conclusions:

1. The value of currency may reflect relative returns on assets, or expectations, rather than underlying trade or current account problems.
2. Monetary policy cannot be conducted independently of exchange rate policy.
3. Because of the more rapid change in asset prices than in goods prices, we can expect severe problems in adjusting to difficulties with the external balance (problems with the current account balance of the balance of payments).

A particular implication for us to note is that positive changes that occur, or that are expected, as a result of changes in government policy may lead to changes in expectations and a change in the level of the exchange rate. This may itself prevent or limit the size of the changes that were expected, reducing the eventual benefits to the economy of the policy. This is, of course, somewhat consistent with the views of the rational expectations theory outlined in Chapter 13.

Concept highlights

- The sources of exchange rate overshooting are to be found in differences in the speed of adjustment between asset and product markets in response to changes in economic policy or shocks to the economy.
- The implication of exchange rate overshooting is that our different models of exchange rate behaviour, particularly the portfolio balance approach (PBA) and purchasing power parity (PPP) approach, may not be inconsistent—each simply deals with a different time frame of analysis.
- We can link our PBA and PPP models of the exchange rate through the use of the Fisher and international Fisher equations. These suggest that nominal interest rate differentials between countries reflect the real interest rate differential and also the expected inflation differential.
- Due to differences in the speed of adjustment between asset and product markets, we can expect asset markets to adjust rapidly to changes in economic policy settings, with asset market values overshooting or undershooting longer-term values.
- Expectations and asset market responses mean that, over the short term, the exchange rate may not respond much to fundamental imbalances in the product markets, such as suggested by a current account deficit. Furthermore, these responses might themselves offset the impact of changes in policy settings designed to remedy underlying economic imbalances.

SUMMARY

1 This chapter provided a brief and greatly simplified introduction to models of exchange rate determination—the purchasing power parity (PPP) approach, portfolio balance approach (PBA) and monetary approach.

2 Two common forms of the PPP approach are usually discussed—the absolute and relative PPP models. The absolute PPP model is based on arbitrage considerations and the law of one price.

3 The law of one price asserts that the price of a good, when expressed in terms of a common currency through use of the exchange rate, should be equal across nations. This is due to the presence of arbitrage processes, suggesting shifts of the good across national boundaries in response to price differentials. Under absolute PPP, therefore, the exchange rate is nothing more than the ratio of the price levels of a common basket of goods expressed in each currency.

4 The relative PPP model focuses on the importance of relative inflation rates as a determinant of the exchange rate. It assumes that at one stage absolute PPP held, but that it need not hold at any particular point in time. The relative PPP model suggests that if the rate of inflation in the domestic economy exceeds (or is exceeded by) that of the foreign country, the currency will depreciate (or appreciate) in line with the inflation differential. Evidence in favour of the relative PPP model is weak, and it appears to be a better approximation in the long run than in the short run.

5 PBA models focus on the role of investors' holdings of interest-bearing and return-generating assets. This approach suggests that changes in exchange rates are the result of shifts in investors' international holdings of assets. These shifts occur in response to changes in relativities between the actual and

expected rates of real returns available in each country. For example, a fall in the real domestic interest rate will generate pressures for investors to rebalance their portfolios towards foreign assets. This will lead to an increase in the demand for foreign exchange and a fall in its supply and thus a depreciation of the domestic currency. The converse holds for an increase in real interest rates.

6 Expectations play a central role within PBA models. Expectations of changes that will lead to a depreciation of the exchange rate will be largely self-reinforcing as investors attempt to change their portfolios to protect their returns in light of the revised expectations.

7 The monetary approach to exchange rate determination looks at the relationship between the domestic money supply, the demand for money and the exchange rate. Monetarists assume the size of the money supply to be under the control of the central bank, and that the velocity of money is stable. The demand for money is assumed to purely be a function of the transaction demand. The relationship between prices and the exchange rate assumed in the monetary model takes the form of PPP.

8 Under the assumptions of the monetary approach, the following are observed:

(a) If foreign prices are increased, holding domestic prices constant, then the exchange rate appreciates.

(b) If domestic income grows, assuming incomes in the rest of the world remain constant, the exchange rate appreciates.

(c) If domestic credit is increased, then the exchange rate depreciates.

Due to instability in the velocity of money, and the fact that the monetary authorities focus on interest rates and not on money supply, the monetary approach is not well supported empirically.

9 Exchange rate overshooting has its source in differences in the speed of adjustment between the asset and product markets in response to changes in economic policy or shocks to the economy. The implication of exchange rate overshooting is that our different models of exchange rate behaviour, particularly the PBA and PPP approaches, may be consistent with each other. Each simply deals with a different time frame of analysis, with the PBA approach applying in the short run and the PPP approach in the long run.

10 We can link our PBA and PPP models of the exchange rate through the use of the Fisher and international Fisher equations. These suggest that nominal interest rate differentials between countries reflect the real interest rate differential and also the expected inflation differential.

11 Due to differences in the speed of adjustment between asset and product markets, we can expect asset markets to adjust rapidly to changes in economic policy settings. This implies that asset market values will overshoot or undershoot longer-term values that result after adjustment has taken place in the product markets.

12 Expectations and asset market responses mean that, over the short term, the exchange rate may not respond much to fundamental imbalances in the product markets, such as suggested by a current account deficit. Furthermore, these responses might themselves offset the impact of changes in policy settings designed to remedy underlying economic imbalances.

KEY TERMS *and* CONCEPTS *to remember*



absolute PPP 596
asset market approach (AMA) or portfolio balance approach (PBA) 600
exchange rate 595
exchange rate overshooting 609
Fisher equation, international Fisher equation 608
law of one price 596
monetary approach 604
purchasing power parity (PPP) 596
relative PPP 597
uncovered interest arbitrage 600

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1. What is absolute purchasing power parity? What is relative purchasing power parity? What are the assumptions of each model and how do they differ? Explain.
2. Is the purchasing power parity approach to exchange rates supported by empirical observation? Explain.
3. What are the assumptions of the portfolio balance approach to exchange rate determination? By what other name are these models sometimes known?
4. How does the portfolio balance approach link exchange rates to interest rate and investment-return differentials between nations? Explain.
5. How may it be said that expectations may be self-fulfilling? Explain, within the context of the portfolio balance approach to exchange rate determination.
6. What is the monetary approach to exchange rate determination? What are its assumptions?
7. In what way do the assumptions of the monetary approach contradict empirical evidence? Explain. Is the model then of any value to us? Discuss this issue.
8. How can we claim that there may be no inconsistency between the portfolio balance approach and the purchasing power parity approach to exchange rate determination when their underlying assumptions and determinants are completely different? Explain.
9. How can we link the purchasing power parity approach and portfolio balance approach to exchange rate determination? Describe the nature of these links.
10. What is exchange rate overshooting? What is its source, and what are its implications for economic policy? Discuss.

Problems & exercises

1. If domestic prices rise 10 per cent and foreign prices rise 20 per cent, by approximately how much will the value of the exchange rate change?
2. If foreign interest rates are at 8 per cent and domestic interest rates are at 12 per cent, by how much is the value of the exchange rate expected to change? Why is this expectation necessary to maintenance of balance in the asset markets? Explain.
3. What does the presence of exchange rate overshooting imply about movements in the aggregate demand curve due to the exchange rate effect over the short term and over the long term? Show the impact within the AD–AS framework for each reference period. Do you think that exchange rate overshooting provides a potential source of instability in aggregate demand? Explain.

Application & analysis

1. What is the current exchange rate—quoted as US dollars per currency unit—for the euro, the Australian dollar, the Singapore dollar and the Hong Kong dollar? To find this, and other currency information, visit the Federal Reserve Bank of New York website, and go to its statistics section at:
   http://www.ny.frb.org/pihome/statistics/
2. Based on the information gained in question 1 above, what would be the exchange rates, quoted as domestic currency units per unit of US dollars, in the euro zone, Australia, Singapore and Hong Kong?
3. If you look at currency quotes in the newspaper, you will observe that there are bid and offer rates. The bid rate is the amount that the bank will pay you for a unit of the currency being quoted—a 'buy' rate for the bank. The offer rate is the rate at which the bank will sell a unit of the currency being quoted to you—a 'sell' rate for the bank. Why do you think that there are two prices quoted? Discuss the possible reasons. What are the current bid and offer rates for the Australian dollar against the US and New Zealand dollars? What does each imply? Explain.

A LAST WORD BURGERNOMICS

An interesting way to view exchange rates is to take a single product and measure its price throughout the world. The basis for the discussion is purchasing power parity (PPP), a concept explained in the article (and in this chapter). The product is the Big Mac. Although intended as a light-hearted look at exchange rates and exchange rate theory, a Big Mac PPP has much to say about differences between equilibrium and actual exchange rates, as this discussion reveals.

The *Economist*'s Big Mac index offers a guide to whether currencies are at their 'correct' level. It is based on 'purchasing power parity'—the notion that an identical basket of goods and services should cost the same in all countries.

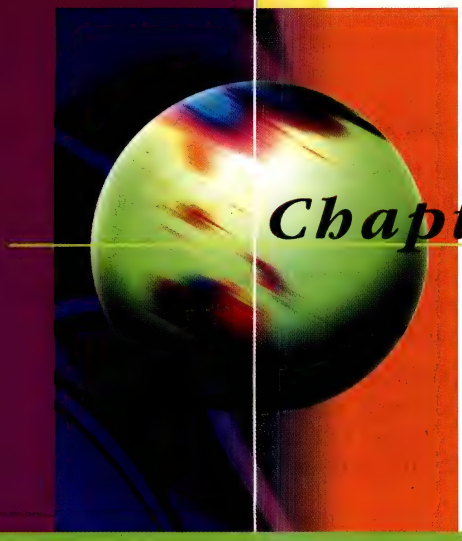
The Big Mac PPP is the exchange rate at which hamburgers would cost the same in America as abroad. The chart calculates the over- or under-valuation of emerging-market currencies against the dollar. Dividing the local-currency price of a Big Mac in, say, Brazil, by its American price produces a dollar PPP or 1.2 *reais*. The actual dollar rate is 1.84 *reais*—that is, the currency is 34 per cent undervalued. According to the Big Mac index, Russia, Turkey, China, Hungary and Malaysia have the cheapest currencies in the emerging world: they are more than 50 per cent undervalued compared with the dollar. At the other extreme, the Israeli shekel is 43 per cent overvalued. The chart also shows that the euro is now fairly close to its Big Mac dollar PPP, but sterling and yen are both overvalued.

Source: Economist, *8 January 2000.*



Questions

1. Does the Big Mac provide a fair or useful basis for a discussion of PPP concepts and the law of one price? Explain. Justify your conclusion.
2. Can you find out more about the Big Mac index and its value as an indicator of exchange rate equilibrium? Look back to previous issues of the *Economist* for information, and visit the *Economist*'s website at:
   http://www.economist.com/
3. Which factors might tend to distort the relative prices of Big Macs across different countries? List these and explain the effect of each on the local-currency price of a Big Mac.



Chapter 19 THE INTERNATIONAL MONETARY SYSTEM

INTRODUCTION

Chapter 3 provided a simple model of the exchange rate—one based on the supply and demand for foreign currency. Chapter 4, in its analysis of Australia's balance of payments, examined some of the transactions that require the exchange of currencies. Chapters 9 and 12 in their discussions of fiscal and monetary policies considered the implications of interest rate changes on the level of the exchange rate, and the implications for the equilibrium levels of real output, employment and the price level. Chapter 18 extended the analysis of Chapter 3 and was concerned with presenting some simplified models of exchange rate determination. It examined some alternative explanations of the determinants of the demand for and supply of any currency, and some of the models used to explain the values that exchange rates may take.

We will now focus on the international monetary system and its development over time. First, however, we need to take a look at the extreme forms of exchange rate systems that may be put in place, and their advantages and disadvantages. These are the flexible and fixed exchange rate systems. Finally, we will take a look at the recent history of Australia's own exchange rate.

LEARNING OBJECTIVES

- **Revisit the determination of the exchange rate by briefly examining the polar extremes of freely flexible and fixed exchange rates.**
- **Explain and evaluate the various kinds of exchange rate systems that trading nations use.**
- **Describe the gradual reform of the international monetary system, including the three different exchange rate systems that the nations of the world have employed.**
- **Discuss the recent history of and changes in Australia's exchange rate.**

EXCHANGE RATE SYSTEMS

There are two polar options for an exchange rate system:

1. a system of flexible or floating exchange rates where the rates at which national currencies exchange for one another are determined by demand and supply
2. a system of rigidly fixed exchange rates where government intervention in foreign exchange markets or some other process offsets the changes in exchange rates that fluctuations in demand and supply would otherwise cause.

Each of these systems has been utilised by different countries at some stage in the past. Note, however, that many actual exchange rate systems will embody elements of each of these extreme positions. Figure 19.1 allows us to illustrate the process of exchange rate adjustments under the various systems.

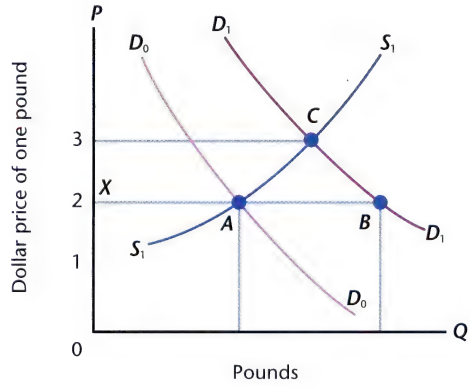


FIGURE 19.1
Adjustments under flexible exchange rates, fixed exchange rates, the gold standard and exchange controls

Under flexible rates, an Australian trade deficit at the $2-for-£1 rate, indicated by the distance *AB*, would be corrected by an increase in the rate to $3 for £1. Under the gold standard, the deficit would cause changes in domestic prices and incomes, which would shift the demand for (D_1D_1) and the supply of (S_1S_1) pounds into equilibrium at the $2-for-£1 rate. Under exchange controls, the government would ration the available supply of pounds *XA* among persons demanding the quantity *XB*.

FREELY FLOATING EXCHANGE RATES

Floating exchange rates: exchange rates for which the values are determined by the unimpeded forces of supply and demand.

As discussed in Chapter 3, freely **floating exchange rates** are determined by the unimpeded forces of supply and demand. Let us examine the exchange rate, or price, at which Australian dollars might be exchanged for, say, British pounds sterling. The market for foreign exchange is represented in Figure 19.1. As in Chapter 3, the demand for pounds is down-sloping, and the supply of pounds is up-sloping. The intersection of the supply and demand for pounds determines the dollar price of pounds. In this instance, the equilibrium rate of exchange is $2 to £1.

DEPRECIATION AND APPRECIATION

Exchange rate depreciation: an increase in the number of units of a country's currency required to buy a single unit of some foreign currency.

An exchange rate that is determined by free-market forces can and does change frequently. As discussed in Chapter 3—and elaborated on in Chapter 18—the equilibrium exchange rate will change in response to changes in one or more of the determinants of the exchange rate—tastes, relative income changes, relative price changes, relative interest changes, or changes in the expectations of speculators.

Exchange rate appreciation: a reduction in the number of units of a country's currency required to buy a single unit of some foreign currency.

Exchange rate depreciation means that it takes more units of a country's currency (in this case Australian dollars) to buy a single unit of some foreign currency (in this case British pounds sterling). Conversely, **exchange rate appreciation** means that it takes fewer units of a country's currency (in this case Australian dollars) to buy a single unit of some foreign currency (in this case British pounds sterling).

FLEXIBLE RATES AND THE BALANCE OF PAYMENTS

Proponents of flexible change rates argue that such rates embody a compelling virtue—flexible rates automatically adjust so as to eliminate balance of payments deficits or surpluses. We can explain this by looking at S_1S_1 and D_0D_0 in Figure 19.1. The resulting equilibrium exchange rate of \$2 = £1 correctly suggests that there is no balance of payments deficit or surplus. At the \$2 = £1 exchange rate, the quantity of pounds demanded by Australians in order to import British goods, buy British transport and insurance services, and pay interest and dividends on British investments in Australia equals the amount of pounds supplied by the British in buying Australian exports, purchasing services from Australians, and making interest and dividend payments on Australian investments in Britain.

Now let us suppose there is a change of tastes—for example, Australians may decide to buy more British cars. Or we might assume that the price level has increased relative to that of Britain or that interest rates have fallen in Australia as compared to Britain. Any such changes will cause the Australian demand for British pounds to increase from D_0D_0 to say, D_1D_1, in Figure 19.1. We observe that at the initial \$2 = £1 exchange rate an Australian balance of payments deficit has been created in the amount *AB*; that is, at the \$2 = £1 rate there is a shortage of pounds in the amount *AB* to Australians. Australian export-type transactions will earn *XA* pounds, but Australians will want *XB* pounds to finance import-type transactions. Because this is a free competitive market, the shortage will change the exchange rate (the dollar price of pounds) from \$2 = £1 to, say, \$3 = £1; that is, the dollar has depreciated. A change in Australian tastes towards domestic goods would have had an opposite effect—the exchange rate of the dollar would have appreciated.

The point is that the free fluctuation of exchange rates in response to shifts in the supply of and demand for foreign monies automatically corrects balance of payments deficits and surpluses. However, as discussed in Chapter 5, although equilibrium in the balance of payments occurs—by definition from Chapter 4—it tells us nothing about whether we are in a sustainable external position. This requires consideration of the components of the balance of payments, particularly the current account and its net income balance. External balance is really about current account balance over the longer term, and it is this that the exchange rate itself will often adjust towards.

DISADVANTAGES OF FLOATING RATES

Though freely fluctuating exchange rates automatically correct a balance of payments disequilibrium, and may help to deliver external balance through the current account over time, they may entail several significant problems.

Uncertainty and diminished trade

It has often been suggested that the risks associated with flexible exchange rates are likely to discourage the flow of trade. To illustrate—suppose an Australian

dealer contracts to purchase antiques for £15 000. At the current exchange rate of, say, $2 for £1, the Australian importer expects to pay $30 000. But if in the two-month or three-month shipping period the rate of exchange shifts to $3 for £1, the £15 000 payment contracted by the Australian importer will now amount to $45 000. This unheralded increase in the dollar price of pounds may easily turn the potential Australian importer's anticipated profits into substantial losses. Aware at the outset of the possibility of an adverse change in the exchange rate, the Australian importer may simply not be willing to assume the risks involved. As a result, international trade may not occur in this item.

The same rationale applies to investment. Assume that, when the exchange rate is $3 to £1, a British firm invests £10 000 (or $30 000) in an Australian enterprise. It estimates a return of, say, 10 per cent per annum, or anticipated earnings of £1000 or $3000. Suppose the British firm's expectations prove correct in the sense that the Australian firm earns $3000 the first year on its $30 000 investment. But what if, during the year, the value of the dollar depreciates to $4 = £1? The absolute return is now only £750 (rather than £1000) and the rate of return falls from the anticipated 10 per cent to 7.5 per cent (= £750 ÷ £10 000). Investment is inherently risky. The added risk posed by adverse changes in exchange rates may persuade the potential investor to shy away from Australian ventures.[1]

Terms of trade

A nation's terms of trade tend to be worsened by a decline in the international value of its currency. For example, an increase in the dollar price of pounds means that Australia must export a larger volume of goods and services to finance a given level of imports from Britain. For Australia, this has been a long-term problem. Prices of the bulk of our exports—primary products—have fallen relative to those of the goods and services that we import most heavily. The result has been a long-term decline in Australia's terms of trade, and a need for us to switch to the production of more sophisticated goods and services over time.

Instability

Freely fluctuating exchange rates may also have some destabilising effects upon the domestic economy, as wide fluctuations stimulate and then depress those industries producing internationally traded goods. If the Australian economy is operating at full employment and the international value of its currency depreciates as in our illustration, the results will be inflationary.

This holds for two reasons. First, foreign demand for Australian goods will increase; that is, the net exports component of aggregate expenditures will increase and cause demand-pull inflation. Second, the prices of all Australian imports will increase. Conversely, appreciation of the dollar could lower exports and increase imports, tending to cause unemployment. Looked at from the vantage point of policy, floating exchange rates complicate the use of domestic fiscal and monetary policies by governments in seeking full employment and price stability (see Chapters 9 and 12).

FIXED EXCHANGE RATES

Fixed (or pegged) exchange rates: exchange rates for which the values are determined by government decision.

At the other extreme, nations have often **fixed**, or 'pegged', their **exchange rates** in an effort to circumvent the disadvantages associated with floating rates. To analyse the implications and problems associated with fixed rates, let us assume that Australia and Britain agree to maintain a $2 = £1 exchange rate.

The basic problem, of course, is that government proclamation that a dollar will be worth so many pounds does not mandate stability with respect to the demand for and supply of pounds. As demand and supply shift over time, the

government must intervene directly or indirectly in the foreign exchange market if the exchange rate is to be stabilised. Consider Figure 19.1 once again. We assume that the Australian demand for pounds increases from D_0D_0 to D_1D_1 and an Australian payments deficit of AB arises. This obviously means that the Australian government is committed to an exchange rate ($2 = £1) which is below the equilibrium rate ($3 = £1). How can Australia prevent the shortage of pounds—reflecting an Australian balance of payments deficit—from driving the exchange rate up to the equilibrium level?

Clearly, the answer is to alter market demand or supply, or both, so that they continue to intersect at the $2 = £1 rate of exchange. There are several means by which this can be achieved.

USE OF RESERVES

International monetary reserves: stocks of foreign monies owned by a particular government.

The most desirable means of pegging an exchange rate is to manipulate the market through the use of its **international monetary reserves**. International monetary reserves are simply stocks of foreign monies owned by a particular government. In Australia, as we saw in Chapter 12, these reserves form an important part of the Reserve Bank of Australia's balance sheet.

How do reserves originate? Let us conveniently assume that in the past the opposite market condition prevailed where there was a surplus, rather than a shortage, of pounds, and the Australian government had acquired that surplus; that is, at some earlier time the Australian government spent dollars to buy surplus pounds that were threatening to reduce the $2 = £1 exchange rate to, say, $1 = £1. By now selling a part of its reserve of pounds, the Australian government could shift the supply-of-pounds curve to the right so that it intersects D_1D_1 at B in Figure 19.1, thereby maintaining the exchange rate at $2 = £1.

Historically, nations have used gold as 'international money' or, in other words, as reserves. Hence, in our example the Australian government might sell some of the gold that it owns to Britain for pounds. The pounds thus acquired could be used to augment the supply earned through Australian trade and financial transactions, shifting the supply of pounds to the right to maintain the $2 = £1 exchange rate.

It is obviously critical that the amount of reserves is enough to accomplish the required increase in the supply of pounds. This is not a problem if deficits and surpluses occur more or less randomly and are of approximately equivalent size; that is, last year's balance of payments surplus with Britain will increase the Australian reserve of pounds, and this reserve can be used to 'finance' this year's deficit. But, if Australia encounters persistent and sizeable deficits for an extended period, the reserves problem can become critical, and force the abandonment of a system of fixed exchange rates. Or, at least, a nation whose reserves are inadequate must resort to less appealing options if it hopes to maintain exchange rate stability.

TRADE POLICIES

One set of policy options entails measures designed to control directly the flows of trade and finance. Australia might undertake to maintain the $2 = £1 exchange rate in the face of a shortage of pounds by discouraging imports (so reducing the demand for pounds) and by encouraging exports (so increasing the supply of pounds). Specifically, imports can be reduced by imposing either tariffs or import quotas or a combination of the two (see Chapter 19 of the companion book *Microeconomics*, 6th edition). Similarly, special taxes may be levied on the

interest and dividends that Australians receive for foreign investments. On the other hand, the Australian government might subsidise certain Australian exports and thus increase the supply of pounds.

The fundamental problem with these policies is that they reduce the volume of world trade and distort its composition or pattern away from what is economically desirable; that is, tariffs, quotas and the like can be imposed only at the sacrifice of some portion of the economic gains or benefits attainable from a free flow of world trade based upon the principle of comparative advantage. These effects should not be underestimated; remember that the imposition of exchange or trade controls can elicit retaliatory responses from other nations that are adversely affected.

EXCHANGE CONTROLS: RATIONING

Exchange controls: government rationing of the supply of foreign exchange among importers, with the objective of restricting imports to the amount of foreign exchange earned by exports.

Another option is exchange controls, or rationing. Under **exchange controls**, the Australian government would handle the problem of a pound shortage by requiring that all pounds obtained by Australian exporters be sold to it. Then, in turn, the government would allocate or ration this short supply of pounds (see *XA* in Figure 19.1) among various Australian importers who demand the quantity *XB*. In this way, the Australian government would be restricting imports to the amount of foreign exchange earned by exports. Australian demand for British pounds in the amount *AB* would simply be unfulfilled. Government would force a balance of payments equilibrium by restricting imports to the value of exports.

There are many objections to exchange controls. First, like trade policies—tariffs, quotas and export subsidies—exchange controls distort the pattern of international trade away from that based on comparative advantage. Second, the process of rationing scarce foreign exchange necessarily involves discrimination among importers. Serious problems of equity and favouritism are implicit in the rationing process. Third, controls impinge upon the freedom of consumer choice. The business opportunities of some Australian importers are necessarily impaired because imports are being constrained by government. Finally, there are likely to be enforcement problems. The market forces of demand and supply indicate there are Australian importers who want foreign exchange badly enough to pay more than the \$2 = £1 official rate; this sets the stage for extra-legal, or 'black market', foreign exchange dealings.

DOMESTIC MACROECONOMIC ADJUSTMENTS

A final means of maintaining a stable exchange rate is to use domestic fiscal and monetary policies in such a way as to eliminate the shortage of pounds. In particular, restrictive fiscal and monetary measures will reduce Australia's national income relative to Britain's and so restrain our demand for British goods and, therefore, for pounds. (You will recall from Chapter 7 that imports vary directly with the level of national income.) To the extent that these contractionary policies cause our price level to decline relative to Britain's, Australian buyers of consumption and investment goods will divert their demands from British to Australian goods, thus restricting the demand for pounds.

Additionally, a restrictive (tight) money policy will increase Australia's interest rates as compared to Britain's and thus reduce Australian demand for pounds to make financial investments in Britain. From Britain's standpoint, higher Australian interest rates will stimulate British financial investment in Australia, increasing the supply of pounds. The combination of a decrease in the demand for, and an increase in the supply of, pounds will obviously tend to eliminate the initial Australian payments deficit. In terms of Figure 19.1, the new supply and demand curves will intersect at some new equilibrium point on the *XAB* line where the exchange rate persists at \$2 = £1.

This means of maintaining pegged exchange rates is hardly appealing. The 'price' of exchange rate stability for Australia is falling output, employment and price levels—in other words, a recession! Achieving a balance of payments equilibrium and realising domestic stability are both important national economic objectives, but to sacrifice the latter for the former is to let the tail wag the dog!

A recapitulation: proponents of fixed exchange rates contend that such rates lessen the risks and uncertainties associated with international trade and finance. Fixed rates are therefore said to be conducive to a large and expanding volume of mutually advantageous trade and financial transactions. However, the viability of a fixed-rate system hinges upon two interrelated conditions:

1 the availability of adequate amounts of reserves

2 the random occurrence of payments deficits and surpluses that are of modest size.

Large and persistent deficits may deplete a nation's reserves. A nation with inadequate reserves is confronted with less desirable options. On the one hand, it may have to submit to painful and politically unpopular macroeconomic adjustments in the form of inflation or recession—macroeconomic policy independence will be lost. On the other hand, that nation may have to resort to protectionist trade policies or exchange controls, both of which inhibit the volume of international trade and finance.[2]



Concept highlights

- The two polar systems for determining the exchange rate are the floating and fixed exchange rate systems.
- Under a floating exchange rate system, the level of the exchange rate is determined purely by the market forces of supply and demand. Under floating rates, a currency will depreciate or appreciate as a result of changes in tastes, relative income changes, relative price changes and relative changes in real interest rates, and because of speculation.
- The benefit of a freely floating exchange rate system is that a deficit (surplus) on the current account will be offset by a surplus (deficit) on the capital account—a truism. However, this does not ensure external balance, which requires a sustainable balance on the current account.
- Arguments against flexible exchange rates include:
  - the possibility of diminished trade as a result of uncertainty on prices and profits brought about by movements in the exchange rate
  - the potential for continually declining terms of trade
  - instability in the macroeconomic environment due to the impact of shifts in net exports brought about by changes in the exchange rate.
- Maintenance of fixed exchange rates requires adequate reserves to accommodate periodic payments deficits. The government must intervene in the market to ensure that the total demand for and total supply of currency are such that the target exchange rate level is maintained.
- A supposed advantage of fixed exchange rates is that they provide stability in which to conduct international trade.
- The disadvantage of fixed exchange rates is that if foreign exchange reserves are inadequate, nations must enact activist economic policies to maintain the exchange rate. These include:
  - implementing protectionist trade policies to increase net exports
  - using exchange controls, so that imports may be financed only through the proceeds of exports
  - using fiscal and monetary policies to adjust the equilibrium level of real domestic income to a level consistent with exchange rate equilibrium at the target exchange rate level.

Business IMPLICATION — IS THE EXCHANGE RATE SYSTEM STABLE?



The presence of a variety of exchange rate systems in the world adds a further element of risk to our international transactions—political risk. We have free-floating exchange rates, managed floating exchange rates, fixed exchange rates, and managed pegs. Examples of these latter two systems include China, which has a fixed (although moveable) peg against the US dollar, and its special administrative region Hong Kong, which maintains a relatively fixed rate against the US dollar via government use of monetary policy. The political risk that we face from these types of systems is the potential for the pegged rates to be changed by government decree.

The significance of political risk is evidenced by the ability of the monetary authorities in China and Hong Kong to add hundreds of millions of US dollars to their international reserves during the Asian crisis. Both the People's Bank of China and the Hong Kong Monetary Authority sold 'put options', on the yuan and Hong Kong dollar respectively to nervous international investors and traders. These investors and traders feared that the yuan and Hong Kong dollar would be devalued due to the detrimental impact of the Asian crisis on export volumes and values. This, however, didn't happen. The implication: be sure to analyse both the exchange rate system and its government's commitment to stability before handing over your money.

TRADE AND FINANCE PROBLEMS: THE INTERNATIONAL SETTING

Armed with an understanding of the polar exchange rate systems, we are now in a position to survey the main developments in international finance in recent times. In particular, our discussion will focus on the gradual reform of the international monetary system, including the three different exchange rate systems that the nations of the world have employed.

A BACKWARD GLANCE: THE GOLD STANDARD

Gold standard: a system under which the value of a nation's monetary unit was backed by gold rather than fiat.

Over the 1879–1934 period—with the exception of the World War I years—most industrialised nations participated in an international monetary system known as the **gold standard**. This system provided for essentially fixed exchange rates, and a backward glance at its operation and ultimate downfall is instructive with respect to some of the problems associated with fixed-rate systems.

GOLD STANDARD CONDITIONS

A nation is on the gold standard when it fulfils three conditions:

1. It must define its monetary unit in terms of a certain quantity of gold.
2. It must maintain a fixed relationship between its stock of gold and its domestic money supply.
3. It must allow gold to be freely exported and imported.

If each nation defines its monetary unit in terms of gold, the various national currencies will have a fixed relationship to one another. For example, suppose Australia defines a dollar as being worth, say, 25 grains of gold and Britain defines its pound sterling as being worth 50 grains of gold. This means that a British pound is worth 50 ÷ 25 dollars or, simply, £1 equals $2.

GOLD FLOWS

Now, if we momentarily ignore the costs of packing, insuring and shipping gold between countries, under the gold standard the rate of exchange would not vary from this $2-for-£1 rate. No one in Australia would pay more than $2 for £1, because we could always buy 50 grains of gold for $2 in Australia, ship it to Britain, and sell it for £1. Nor would the British pay more than £1 for $2. Why should you, when you could buy 50 grains of gold in Britain for £1, send it to Australia and sell it for $2?

The costs of packing, insuring and shipping gold would amount to only a few cents per 50 grains of gold. If these costs were 3 cents for 50 grains of gold, Australians wanting pounds would pay up to $2.03 for a pound rather than buy and export 50 grains of gold to obtain the pound. Why? Because it would cost them $2 for the 50 grains of gold plus 3 cents to send it to Britain to be exchanged for £1. This $2.03 exchange rate, above which gold would begin to flow out of Australia, is called the *gold export point*. Conversely, the exchange rate would fall to $1.97 before gold would flow into Australia. The British, wanting dollars, would accept as little as $1.97 in exchange for £1, because from the $2 they could get by buying 50 grains of gold in Britain and reselling it in Australia, 3 cents must be subtracted to pay shipping and related costs. This $1.97 exchange rate, below which gold would flow into Australia, is called the *gold import point*. Our basic conclusion is that under the gold standard the flow of gold between nations would result in exchange rates that for all practical purposes are fixed.

DOMESTIC MACRO ADJUSTMENTS

Figure 19.1 is useful for explaining the kinds of adjustments that the gold standard would entail. Here we assume that initially the demand for and the supply of pounds are D_0D_0 and S_1S_1 respectively, and the resulting intersection point at A coincides with the fixed exchange rate that results from the 'in gold' definitions of the pound and the dollar; that is, Australia has defined the dollar to be 25 grains of gold and Britain has defined the pound to be 50 grains of gold, so the resulting gold standard exchange rate is $2 for £1. Let us now suppose that for some reason Australian tastes or preferences for British goods increase, shifting the demand for pounds to D_1D_1. We now find that there is a shortage of pounds equal to AB, implying an Australian balance of payments deficit.

What will happen? You will remember that the rules of the gold standard game prohibit the exchange rate from moving from the fixed $2 = £1 relationship; the rate cannot move up to a new equilibrium of $3 = £1 at point C as it would under freely floating rates. What happens is that the exchange rate rises by a few cents to the Australian gold export point at which gold flows to Britain. The flow of gold from Australia to Britain brings about a contraction of the money supply in Australia and an expansion of the money supply in Britain. Other things being equal, this brings about a decline in aggregate demand and, therefore, in real domestic output, employment, and the price level in Australia. Also, the reduced money supply boosts Australian interest rates. The opposite occurs in Britain: the inflow of gold increases the money supply, causing aggregate demand, national income, employment, and the price level all to increase. The increased money supply also lowers interest rates in Britain.

What will be the impact of all these macroeconomic adjustments in terms of Figure 19.1? Declining Australian incomes and prices will reduce our demand for British goods and services and therefore reduce the Australian demand for pounds. Lower relative interest rates in Britain will make it less attractive for

Australians to invest there, also reducing the demand for pounds. For all these reasons, the D_1D_1 curve will shift to the left. Similarly, increased incomes and prices in Britain will increase British demand for Australian goods and services, and higher Australian interest rates will encourage the British to invest more in Australia. All these developments will increase the supply of pounds available to Australians, shifting the S_1S_1 curve to the right. In short, domestic macroeconomic adjustments in Australia and Britain, triggered by the international flow of gold, will give rise to new demand and supply curves for pounds that intersect at some point on the horizontal line between points *A* and *B*.

Take note of the critical difference in the adjustment mechanisms associated with freely floating exchange rates and the fixed rates of the gold standard. With floating rates the burden of the adjustment is upon the exchange rate itself. In contrast, the gold standard entails changes in the domestic money supplies of participating nations, which in turn precipitate changes in price levels, real output and employment, and interest rates.

EVALUATION

The gold standard has these advantages:

1. The stable exchange rates that the gold standard fosters reduce uncertainty and risk and may therefore stimulate the volume of international trade.

2. The gold standard automatically corrects balance of payments deficits or surpluses. If an Australian payments deficit occurs, as is implied by the shift of the Australian demand curve for pounds from D_0D_0 to D_1D_1 in Figure 19.1, inevitable gold flows cause shifts in the supply and demand curves for pounds until they intersect once again at the fixed \$2 = £1 exchange rate. The payments deficit implied by the initial *AB* shortage of pounds in our previous example has been eliminated. Note that the rules of the gold standard make these adjustments automatic; no discretionary policy actions have been taken. It is not surprising that economists who advocate the gold standard are generally those who are distrustful of discretionary governmental policies.

The gold standard also has two salient shortcomings:

1. The basic drawback of the gold standard is apparent from our discussion of the adjustment processes it entails. Nations on the gold standard must accept domestic adjustments in such distasteful forms as unemployment and falling incomes on the one hand, or inflation on the other. In playing the gold standard (fixed exchange rate) game, nations must be willing to submit their domestic economies to painful macroeconomic adjustments. As our example makes clear, under the gold standard a nation's monetary policy would be determined largely by changes in the demand for and supply of foreign exchange. If Australia, for example, was already tending towards recession, the loss of gold under the gold standard would reduce its money supply and intensify the problem. Under the international gold standard, nations would have to forgo independent monetary policies.

2. The gold standard can function only as long as no participants run out of gold! Thus, if Australia was not a gold producer and it experienced persistent gold outflows, it would be forced at some point to abandon the gold standard. Stated differently, gold constitutes the official reserves of this system, and nations can meet the requirement of keeping their exchange rate fixed only when such reserves are available to them.

DEMISE

The worldwide Great Depression of the 1930s signalled the end of the gold standard. As national outputs and employment plummeted, the restoration of prosperity became the primary goal of afflicted nations. Protectionist measures were enacted as the various nations sought to increase net exports and so stimulate their domestic economies. And each nation was fearful that its economic recovery would be aborted by a balance of payments deficit that would lead to an outflow of gold and consequent contractionary effects. Indeed, the various nations on the gold standard attempted to devalue their currencies in terms of gold so as to make their exports more attractive and imports less attractive. These devaluations undermined a basic condition of the gold standard, and the system simply broke down.

World War II was similarly disruptive to world trade and finance. Hence, it is fair to say that as World War II drew to a close the world trading and monetary systems were in a shambles.

THE BRETTON WOODS MONETARY SYSTEM

Adjustable-peg system of exchange rates: system by which members of the IMF were obligated to define their monetary units in terms of gold (or US dollars), establishing par rates of exchange between the currencies of all other members; and to keep their exchange rates within 1 per cent of these par values.

To lay the groundwork for a new international monetary system, an international conference of Allied nations, including Australia, was held in 1944 at Bretton Woods, New Hampshire in the United States. Out of this conference evolved a commitment to an **adjustable-peg system of exchange rates**, sometimes called the **Bretton Woods system**.

Further, the conference created the **International Monetary Fund (IMF)** to make the new exchange rate system feasible and workable. This international monetary system, emphasising relatively fixed exchange rates and managed through the IMF, prevailed with modifications until 1971. The IMF continues to play a basic role in international finance, and in recent years it has performed a major role in ameliorating the debt problems of the developing nations (see Chapter 17).

IMF AND PEGGED EXCHANGE RATES

What was the Bretton Woods system? Why did it evolve? What caused its demise? Consider the second question first. During the depressed 1930s, various countries resorted to the practice of devaluing their currencies in the hope of stimulating domestic employment. But the problem was that every nation can play the devaluation game, and most did. The resulting rounds of competitive devaluations benefited no one; on the contrary, they actually contributed to the further demoralisation of world trade. Nations at Bretton Woods therefore agreed that the post-war monetary system must provide for overall exchange rate stability whereby disruptive currency devaluations could be avoided.

What were the features of the adjustable-peg system of exchange rates? First, reminiscent of the gold standard, each member of the IMF was obligated to define its monetary unit in terms of gold (or US dollars), so establishing par rates of exchange between its currency and the currencies of all other members. Each nation was further obligated to keep its exchange rate essentially stable vis-a-vis any other currency; that is, a nation was allowed to vary its exchange rate only 1 per cent above and below its established par value. But how was this obligation to be fulfilled? Fixed rates can be maintained only if sufficient

international monetary reserves are available. Under the Bretton Woods system, these reserves were of two kinds.

Stabilisation funds

Stabilisation fund: supplies of both foreign and domestic monies and gold held with the central bank or treasury for the purpose of intervention in the foreign exchange market to maintain the par value of the exchange rate.

Each member nation established a **stabilisation fund**, affiliated with its central bank or treasury, which held supplies of both foreign and domestic monies and gold. These were used as required to augment the supply of or demand for any currency to avoid or restrict fluctuations in the rate of exchange. For example, if the dollar appreciated in value, the Australian government could augment the supply by offering extra dollars for sale. This action restricted the rise in the price of dollars. Conversely, if the dollar depreciated in value, the government could use some of the foreign currencies it had on hand to buy dollars. This bolstered the demand for dollars and limited the decline in the price of the dollar.

IMF credit

The IMF was empowered to make short-term loans to nations faced with temporary, or short-run, balance of payments deficits. These loans were made out of currencies and gold contributed by the participating nations on the basis of size of national incomes, population and volume of trade. If Britain or France, for example, faced a temporary shortage of US dollars, it could borrow the needed dollars from the IMF by supplying its own currency as collateral. The dollars so acquired were in the form of a loan, not a grant, and had to be repaid with interest in a relatively short period. It was presumed that the borrowing country's trade deficit with the United States would be corrected soon thereafter, so that it could obtain the gold or dollars needed to retire its IMF loan.

FUNDAMENTAL IMBALANCES: ADJUSTING THE PEG

A fixed-rate system such as Bretton Woods functions well as long as a nation's payments deficits and surpluses occur more or less randomly and are approximately equal in size. If a nation's payments surplus last year allows it to add a sufficient amount to its international monetary reserves to finance this year's payments deficit, no problems will arise. But what if the United States, for example, were to encounter a 'fundamental imbalance' in its international trade and finance so that it was confronted with persistent and sizeable payments deficits? In this case, it is evident that the United States will eventually run out of reserves and hence be unable to maintain its fixed exchange rate.

To cope with such situations, the IMF allowed each member nation to alter the value of its currency by 10 per cent, without explicit permission from the IMF, in order to correct a deeply rooted or 'fundamental' balance of payments deficit. Larger exchange rate changes required the sanction of the IMF's board of directors. By requiring approval for significant rate changes, the IMF attempted to guard against arbitrary and competitive currency devaluation prompted by nations seeking a temporary stimulus to their domestic economies.

The objective of the adjustable-peg system was to realise a world monetary system that embraced the best futures of both a fixed exchange rate system (such as the old international gold standard) and a system of freely fluctuating exchange rates. By reducing risk and uncertainty, short-run exchange rate stability—pegged exchange rates—stimulates trade and is conducive to the efficient use of world resources. Periodic exchange rate adjustments—adjustment of the pegs—made in an orderly fashion through the IMF, and on the basis of permanent or long-run changes in a country's payments position, provided

a mechanism whereby persistent international payments imbalances could be resolved by means other than changes in domestic levels of output and prices.

DEMISE OF THE BRETTON WOODS SYSTEM

The effective functioning of an essentially fixed exchange rate monetary system, such as the Bretton Woods system, requires the availability of sufficient quantities of international monetary reserves if domestic adjustments in output and employment are to be avoided. Throughout most of the post-war period, gold and certain **key currencies** played this major role. The US dollar was the primary key currency, although other currencies—the British pound, the German mark and the Japanese yen, for example—have functioned in that capacity at various times.

The acceptability of gold bullion as an international medium of exchange was derived from its role under the international gold standard of an earlier era. But why did the dollar become acceptable as money internationally? The answer has historical roots. The United States emerged from World War II as the free world's strongest economy; thus it became the centre of international trade and finance. Further, before and during the war the United States accumulated vast amounts of gold, and between 1934 and 1971 it maintained a policy of buying gold from, and selling gold to, foreign monetary authorities at a fixed price of $34 per ounce. Thus the dollar was convertible into gold on demand; the dollar came to be regarded as a substitute for gold and, therefore, 'as good as gold'.

Dilemma: dollars and deficits

But the role of the dollar as a key currency contained the seeds of a dilemma. Consider the situation as it developed in the 1950s and 1960s. The problem with gold as international money was a quantitative one. The growth of the world's money stock depended upon the amount of newly mined gold, less any amounts hoarded for speculative purposes or used for industrial and artistic purposes. Unfortunately, the growth of the gold stock lagged behind the rapidly expanding volume of international trade and finance, making the dollar increasingly attractive as an international monetary reserve.

A question: how do economies of the world acquire dollars as reserves? The answer—as the result of the US balance of payments deficits. With the exception of three or four years, the United States has incurred persistent payments deficits for decades since 1949. These deficits were financed in part by drawing down US gold reserves. But for the most part US deficits were financed by growing foreign holdings of US dollars which, you will remember, were 'as good as gold' until 1971.

As the amount of dollars held by foreigners soared and as the US gold reserves dwindled, other nations inevitably began to question whether the dollar really was 'as good as gold'. The ability of the US to maintain the convertibility of the dollar into gold became increasingly doubtful, and, therefore, so did the role of the dollar as a key currency. Hence the dilemma: '... to preserve the status of the dollar as a reserve medium, the payments deficit of the United States had to be eliminated; but elimination of the deficit would mean a drying up of the source of additional dollar reserves for the system'.[3] The United States had to reduce or eliminate its payments deficits to preserve the dollar's status as an international medium of exchange. But success in this endeavour would limit the expansion of international reserves or liquidity and therefore tend to restrict the growth of international trade and finance.

Emergence of floating rates

These problems came to a head in the early 1970s and shattered the Bretton Woods system. The chronic balance of payments deficits of the United States, which averaged $2 or $3 billion per year in the 1950s and 1960s, increased sharply in the early 1970s. Deficits of US$20 billion or US$30 billion were not uncommon. Faced with this situation, President Nixon suspended the dollar's convertibility into gold on 15 August 1971, abandoning the 37-year-old policy of exchanging gold for dollars at $34 per ounce. The link between gold and the international value of the dollar was severed, thereby 'floating' the dollar and allowing its value to be determined by market forces. Such profound action was taken on the assumption that the dollar had come to be substantially overvalued in relation to the currencies of the United States' major trading partners—Japan and most of the then European Economic Community. It was thought that the devaluation of the dollar would mean that the exports of the United States would rise and its imports fall, tending to correct the payments deficit. More importantly, the floating of the dollar withdrew American support from the old Bretton Woods system of fixed exchange rates and sounded the death knell for that system.

THE 'MANAGED FLOAT'

Managed floating exchange rate system: the system where central banks buy and sell foreign exchange to smooth out short-run or day-to-day fluctuations in rates to encourage international trade and finance, while allowing for trend or long-term exchange rate flexibility to correct fundamental payments disequilibria.

The system of exchange rates that has since evolved is not easily described; it can probably best be labelled as a system of **managed floating exchange rates**. On the one hand, it is recognised that changing economic conditions among nations require continuing changes in exchange rates to avoid persistent payments deficits or surpluses; exchange rates must be allowed to float. On the other hand, short-term changes in exchange rates—perhaps accentuated by purchases and sales by speculators—can cause frequent and significant exchange rate fluctuations that tend to disrupt the flow of trade and finance. Hence, it is generally agreed that the central banks of the various nations should buy and sell foreign exchange to smooth out these day-to-day fluctuations in rates. These features were formalised by a leading group of IMF nations in 1976. Thus the new system entailed, in its ideal form, not only the needed long-term exchange rate flexibility to correct fundamental payments disequilibria, but also sufficient short-term stability of rates to encourage international trade and finance.

Actually, the current exchange rate system is more complicated than the previous paragraph suggests. While the major currencies, such as American and Canadian dollars, Japanese yen and British pounds, fluctuate or float in response to changing demand and supply conditions, the major European Union (EU) nations have attempted to peg their currencies to one another through the **European Monetary System (EMS)**. This has now been superseded by their introduction of a common EU currency, the **euro**. Further, many underdeveloped nations peg their currencies to that of a major industrial country and fluctuate with it. Finally, some nations peg the value of their currencies to a 'basket' or group of other currencies. (This was the method basically used in Australia from 1974 until the decision to float the Australian dollar in 1983.)

LIQUIDITY AND SPECIAL DRAWING RIGHTS

The shift from the Bretton Woods system of essentially fixed exchange rates to a system generally based on floating rates should, presumably, help significantly with dealing with the 'adjustment problem'. A nation experiencing a payments deficit should find its currency depreciating under a floating rate system. Its exports will rise and its imports will fall, tending automatically to adjust its

balance of payments towards equilibrium. But what of the 'liquidity problem' that played a critical role in the dissolution of the Bretton Woods system?

You will recall, first, that under a fixed-rate system a nation incurring a payments deficit was required to draw upon its international reserves to cover the deficit; that is large quantities of international reserves or liquidity are essential to play the fixed exchange rate game. But with a floating rate system, changing exchange rates automatically tend to correct or ameliorate deficits and thereby lessen the need for reserves. Second, the IMF endorsed in 1967 a plan providing for a new international money called **special drawing rights (SDRs)**. Popularly referred to as 'paper gold', SDRs are created at the initiative of the directors of the IMF, but only with the approval of an 85 per cent majority of the voting power of IMF participants. SDRs are made available to IMF members in proportion to their IMF quotas and can be used, as gold was once used, to settle payments deficits or satisfy reserve needs.

Special drawing rights (SDRs): bookkeeping entries at the IMF, available to IMF members in proportion to their IMF quotas, that may be used to settle payments deficits or satisfy reserve needs in place of foreign exchange or gold.

SDRs are created and function in this way. Assume the IMF is authorised to make available, say, $5000 million in SDRs to member nations. Each nation is allocated, not a piece of paper similar to dollars, marks or pounds, but IMF accounts. In other words, SDRs consist of bookkeeping entries at the IMF, conceptually similar to your current deposit in a trading bank. Now assume that Italy, for example, incurs a payments deficit and does not have sufficient quantities of, say, dollars, marks and yen to cover the deficit. Italy may simply transfer some of its SDR credits to the SDR accounts of the United States, Germany and Japan to finance its deficit. These latter countries accept the SDR balances as payment because they can use the SDRs to finance any deficits they might incur. The basic point is that SDRs constitute an important new source of international monetary reserves.

What backs the SDRs? The answer is, simply, that they are fiat money (see Chapter 10). They are international reserves because IMF members have agreed to accept them as such. How are SDRs valued? What are they worth? The value of the SDR has been determined by a weighted average of the international value of the currencies of the five members having the largest exports. There is safety in numbers—the average international value of this 'basket' of five currencies is less likely to fluctuate than might the value of any single currency, such as the US dollar. The stable value of SDRs has contributed to their acceptability as international monetary reserves.

DEMONETISATION OF GOLD

Reform of the international monetary system involved the intentional downgrading of the role of gold. Close ties between gold and domestic money systems of the various nations were severed long ago. Why? Because there is no particular logic in arbitrarily linking the monetary system to gold or any other commodity; most economists feel it is much more rational to manage the monetary system so as to accommodate changing levels of economic activity!

What actions has the IMF taken towards the demonetisation of gold? First, the creation of SDRs was intended to provide an acceptable replacement for gold as international money. The IMF no longer accepts gold in its transactions. Further, gold has been replaced by SDRs as the official IMF unit of account. Finally, the IMF has gradually disposed of its gold holdings. For all practical purposes, gold has ceased to function as an international money. There does exist an active market for gold where dentists, industrial users, jewellers and speculators are free to buy and sell. Gold prices have changed erratically over time as speculators, interpreting economic and political developments, make decisions to buy and sell.

EVALUATION OF THE MANAGED FLOAT

How well has the managed floating system worked? Although international experience with this system is historically too short for a definitive assessment, the system has both proponents and critics.

Pros

Proponents argue that the system has functioned well—far better than anticipated—during its brief existence.

1 *Trade growth*: In the first place, fluctuating exchange rates did not give rise to the diminution of world trade and finance that sceptics had predicted. In fact, in real terms world trade has grown at approximately the same rate under the managed float as it did during the decade of the 1960s under the fixed exchange rates of the Bretton Woods system.

2 *Managing turbulence*: Proponents argue that the managed float has weathered severe economic turbulence that might well have caused a fixed exchange regime to have broken down several times over! More specifically, such dramatic events as worldwide agricultural shortfalls in 1972–74, extraordinary oil price increases in 1973–74 and again in 1979–80, and worldwide stagflation in 1974–76 and 1981–83 all tended to generate substantial international disequilibria. It is contended that flexible rates facilitated international adjustments to these developments, whereas the same events would have put unbearable pressures upon a fixed-rate system.

The flexibility of Australia's exchange rate in the face of the Asian crisis of the later 1990s is also sometimes used to argue the benefits of a flexible exchange rate. In the absence of this flexibility to depreciate, the impact of the fall in trade with our Asian trading partners would have significantly damaged the recovery of the Australian economy and reduced its growth rates in the late 1990s.

Cons

But there is still considerable sentiment in favour of a system characterised by greater exchange rate stability. Those favouring stable rates envision problems with the current system.

1 *Volatility and adjustment*: Critics argue that exchange rates have been excessively volatile under the managed float. This volatility, it is argued, has been present even when the underlying economic and financial conditions of particular nations have been quite stable. Perhaps more importantly, it is contended that the managed float has not readily resolved balance of payments imbalances, as flexible rates are presumably capable of doing. Thus the United States has run persistent trade deficits in recent years, while Germany and Japan have had persistent surpluses. Changes in the international values of the dollar, mark and yen have not yet corrected these imbalances. The collapse of many currencies in Asia during the Asian crisis is also seen as evidence of the problems with a floating exchange rate system. In fact, the collapse in the value of many of these currencies precipitated further crises in the financial markets due to the heavy borrowing of many of these nations in US dollars against domestically held assets and incomes.

2 *Reinforcement of inflation*: A controversial criticism of the managed float is that it tends to reinforce a nation's inflationary pressures. Much simplified, the argument is as follows. Assume a nation—Britain, for example—experiences domestic inflation as the result of, say, inappropriate stabilisation policies or

cost-push pressures. As a consequence, the British pound depreciates in value. But this depreciation, by stimulating British exports and diminishing its imports, increases aggregate spending in Britain and reinforces its inflationary problem. This additional dose of inflation contributes to the further depreciation of the pound, and the process will repeat itself. To summarise—this 'vicious circle' theory of inflation through exchange rate adjustments is quite new, and a source of considerable disagreement among economists.

A 'non-system'?

Sceptics feel that the managed float is basically a 'non-system'; that is, the rules and guidelines circumscribing the behaviour of each nation vis-a-vis its exchange rate are not sufficiently clear or constraining to make the system viable in the long run. Bluntly put, the various nations will inevitably be tempted to intervene in foreign exchange markets, not merely to smooth out short-term or speculative fluctuations in the value of their currencies (as Australia has done in recent years), but to prop up their currency if it is chronically weak, or purposely to manipulate the value of their currency to achieve domestic stabilisation goals. In short, there is fear that in time there may be more 'managing' and less 'floating' of exchange rates and this may be fatal to the present loosely defined system.

> *The jury is still out on the managed float and no clear assessment has been reached: flexible rates have neither attained their proponents' wildest hopes nor confirmed their opponents' worst fears. But they have seen the major industrial economies through a decade mined with major disturbances to the international economy.*[4]

THE FUTURE

Recent evidence suggests growing dissatisfaction with the system of floating exchange rates that has prevailed since the early 1970s. Criticisms of the present system of floating rates include the following.

First, many political leaders, business executives and central bankers feel that exchange rates have been much more volatile than changing economic conditions justify. While we would expect changes in the relative economic performance of nations, differing rates of inflation and GDP growth to alter exchange rates, actual rate changes do appear to have been much greater than changing economic circumstances would lead us to anticipate. For example, the value of the US dollar rose 19 per cent against other major currencies between March 1984 and March 1985, only to fall by 8 per cent in the next 4 months!

It is recognised that speculative flows of money capital have contributed to such volatility. The resulting exchange rate 'misalignments' have imposed considerable hardships. For example, the rapid rise in the value of the US dollar in the early 1980s tended to depress both American export industries, such as agriculture and computers, and import-competing industries, such as steel and automobiles.

Second, advocates of flexible rates argued that such rates would promptly and efficiently correct balance of payments imbalances. This has simply not happened.

Finally, it was hoped that the flexible rates would insulate domestic economies from economic fluctuations and disturbances in the rest of the world. Again, this in fact has not been the case.

While a number of proposals to reduce exchange rate volatility have been put forward, the most publicised entails a system of 'target zones' modelled after the former European Monetary System (EMS) of the European Union nations.

However, the loss of macroeconomic policy independence required to maintain such systems has often seen their virtual collapse. An example of this is that of the EMS during 1993. Target bands were widened from 2.5 to 15 per cent, and both Britain and Italy were forced to withdraw from the system, due to major currency crises. The recent creation of the European Currency Unit (ECU, the euro) as a single currency for European Union countries will thus require a great willingness on their part to coordinate macroeconomic policies.

Concept highlights

- During the 20th century the major exchange rate systems used were the gold standard, the adjustable-peg system (sometimes called the Bretton Woods system), and the managed float.
- Under the gold standard, countries were required to maintain the value of their currencies in terms of an amount of gold that backed each unit of the currency. Payments deficits would see a reduction in the holdings of gold and a fall in the money supply, constraining the level of economic activity. Payments surpluses would see an increase in the holdings of gold and an increase in the money supply, expanding the level of economic activity. In the 1929–45 period, the depression and World War II severely disrupted the volume and pattern of world trade and led to the demise of the gold standard.
- The post-World War II international monetary system—the Bretton Woods system—was committed to an adjustable-peg system of exchange rates. The International Monetary Fund (IMF) was created to make short-term foreign currency loans to help nations meet temporary payments deficits, and to provide for orderly adjustment of exchange rates to help correct fundamental payments deficits.
- The use of the US dollar as a key currency in the Bretton Woods system created a dilemma. Chronic deficits on the US balance of payments raised doubts about the continued convertibility of the dollar into gold and, therefore, about the status of the dollar as a key currency. However, such deficits were required to increase international reserves. Sharp increases in the US deficit in 1971 forced the abandonment of dollar convertibility into gold, shattering the Bretton Woods system.
- The current system is one of managed floating exchange rates. Central banks buy and sell foreign currencies to smooth out or 'manage' short-term fluctuations, but exchange rates are allowed to float or fluctuate in response to more fundamental changes in a nation's exports and imports.

Business IMPLICATION

WILL THE EURO CUT TRADING COSTS?



The answer to the above question should be 'yes'. The recent introduction of the single currency unit for the greater part of the European Union (EU), in the form of the euro, may provide significant long-term savings to those involved in trade with the larger economies in Europe. The reasons? Firstly, instead of dealing with francs, marks and lira, and so on, Australian exporters now need worry about euros only. Fewer currencies to keep track of means the potential for lower operating costs in dealing with foreign exchange. Secondly, the presence of a single currency, and one that is being traded in such large values and volumes, should reduce the fees and charges associated with foreign exchange purchases and sales. Bulk discounts, if you like, will rapidly develop in the market for euros. The implication for business is that it will be easier to focus on generating markets and sales in greater Europe—the business that most manufacturers and producers are in—and that fewer resources will need to be utilised in managing exposure to multiple foreign currencies.

Asian FOCUS — SDRs AND CURRENCIES IN ASIA

Membership of the IMF brings with it the ability to borrow (or draw upon) deposits valued in terms of statutory drawing rights (SDRs). SDRs are a currency unit for which the value is calculated from a currency basket (comprising, by value, 44 per cent US dollars, 25 per cent euros, 19 per cent yen and 12 per cent pounds sterling).

	Units of currency per SDR				
Country	**1995**	**1996**	**1997**	**1998**	**1999**
Australia	2.00	1.81	2.07	2.29	2.10
Japan	152.86	166.80	175.34	162.77	140.27
China, mainland	12.36	11.93	11.17	11.66	11.36
India	52.29	51.67	53.00	59.81	59.69
Korea	1151.58	1213.93	2286.98	1695.27	1562.47
Malaysia	3.78	3.64	5.25	5.35	5.22
Philippines	38.97	37.80	53.94	55.00	55.33
Singapore	2.10	2.01	2.26	2.34	2.29
Thailand	37.44	36.83	63.75	51.66	51.50

SOURCE: International Monetary Fund, International Financial Statistics, *March 2000.*

Questions

1 Calculate the change in value of each currency against the SDR for the years ended 1996 to 1999. For which countries have there been the greatest changes in value against the SDR? What reasons might there be for the scale of these changes in value over this period? Briefly explain.

2 Have all currencies in the accompanying table weakened against the SDR over the 1995–1999 period? What is different, with respect to size, influence in the region and economic fundamentals, about those that have weakened from the others listed in the table?

RECENT HISTORY OF AUSTRALIA'S EXCHANGE RATE

Since the early 1970s Australia has utilised a number of different exchange rate systems to determine the value of its currency. These arrangements will now be briefly reviewed. The pattern of movement of the Australian dollar since 1970–71 is shown against the US dollar in Figure 19.2.

SETTING EXCHANGE RATES IN THE 1970s

PEGGED TO THE US DOLLAR

From 1971 to 1974 the Australian dollar was usually fixed, or pegged, in relation to the US dollar. During this period the international value of the Australian dollar was under considerable pressure to change, reflecting balance of payment surpluses in 1970–71 to 1971–72 and deficits in 1972–73 and 1973–74. The Australian dollar was revalued by 7.05 per cent against the US dollar in

Revaluation: a reduction in the number of units of the domestic currency required to purchase a unit of foreign currency under the fixed or pegged exchange rate systems.

December 1972. The Australian dollar was effectively revalued again, in February 1973, when the US dollar devalued by 10 per cent against gold, while the Australian dollar maintained its previous gold parity. A further **revaluation** of 5 per cent occurred in September 1973.

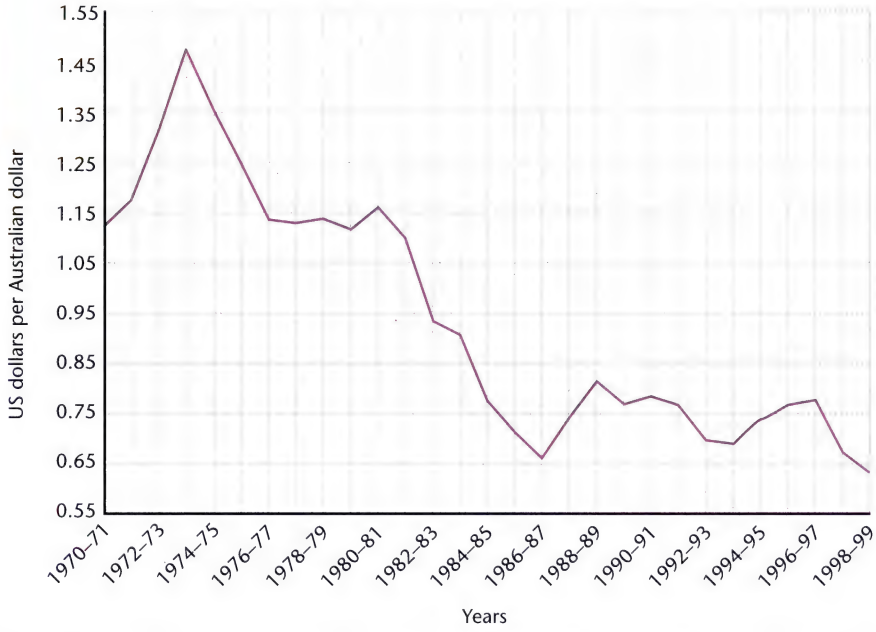


FIGURE 19.2
US dollars per Australian dollar, yearly average rate, 1970–71 to 1998–99

Large changes have occurred in the value of the exchange rate over the last three decades. However, a continued weakness in Australia's current account balance has seen a trend reduction in the value of the exchange rate over time.

SOURCE: Reserve Bank of Australia, Australian Economic Statistics, *and Reserve Bank of Australia,* Bulletin, *various issues.*

PEGGED TO THE TRADE-WEIGHTED INDEX

Trade-weighted index: an index of the 'average' exchange rate, comprised of a basket of currencies of Australia's major trading partners weighted to reflect their relative importance in our total trade.

Devaluation: an increase in the number of units of the domestic currency required to purchase a unit of foreign currency under the fixed or pegged exchange rate systems.

In 1974 the pegged link to the US dollar was replaced by a peg to a trade-weighted 'basket' of currencies[5]—known as the **trade-weighted index**—reflecting the increasing importance to Australia of trade in other currencies, such as the yen. In 1976 the system changed again—this time towards a managed float. The link to the trade-weighted basket was made variable, allowing frequent small shifts in the value of the Australian dollar. By 1976 the Australian dollar was becoming overvalued internationally, due to the presence of persistent balance of payments deficits, implying that a **devaluation** was appropriate. The Australian government chose, in November 1976, to devalue the dollar by a hefty 17.5 per cent, although upward adjustments in the next few months reduced the devaluation to around 12 per cent overall.

The late 1970s found the Fraser coalition government borrowing substantially overseas to counteract a growing deficit on current account and only mild improvements in foreign investment in companies. For example, in 1977 nearly $2000 million were borrowed—mostly US dollars, Deutschmarks and yen. The justification for the borrowing program was that it would enable Australia to 'mark time' on the capital account. In other words, the government was prepared to see external debt mount, while waiting for investment inflow to pick up. This required that interest rates remain relatively attractive and that inflation, relative to Australia's trading partners, be greatly checked, to maintain the value of the exchange rate.

Global SNAPSHOT — NET CAPITAL FLOWS TO EMERGING MARKET ECONOMIES

Emerging market economies rely heavily on foreign capital to augment the level of their domestic savings for funds that enable both public and private investment. However, as the Asian crisis of the late 1990s has again reminded us, there is no guarantee that the level of capital flows will be either sufficient or stable over time. Here we present data on net private capital flows and their composition over the 1995–1999 period.

	Net private capital flows (US$ billion)	Net direct investment (US$ billion)	Net portfolio investment (US$ billion)
1995	192.9	93.0	38.3
1996	213.8	113.5	74.0
1997	148.8	142.6	66.7
1998	66.2	132.4	27.1
1999	68.3	118.5	21.6

SOURCE: International Monetary Fund, World Economic Outlook, *October 1999.*

Questions

1. Using the tabled data, calculate the value of the 'Other net investment' category (the difference between net private capital flows and the sum of net direct and portfolio investment). What happened to the value of the 'Other net investment' category over the 1995–1999 period?
2. In which year did the Asian crisis begin? In which years were net capital flows most strongly affected? Explain why there is a difference in timing between the event and the change in capital flows.
3. Which components of capital flow were most strongly affected by the Asian crisis? Explain why this was so.
4. What are the implications for the countries receiving less capital inflow as a result of the Asian crisis? List some of the possible short-term and longer-term economic consequences.

THE FLOATING OF THE EXCHANGE RATE

FLOATING AND THE CURRENT ACCOUNT CRISIS

The newly elected Hawke Labor government of 1983 faced a number of structural problems in the balance of payments. The pressure on the current account had mounted in the early 1980s as the balance of trade became negative and overseas debt required larger interest payments; net income deteriorated sharply. The deficit on current account had been supported by substantial increases in the levels of capital inflows. In December of that year, a major change in Australian exchange rate setting was made when the Australian dollar was floated. This was done partly to stem the speculative tide of foreign capital inflows—those from institutions expecting a revaluation of the Australian dollar—and partly to relieve inflationary growth in the money supply. A new era for the dollar had arrived. The way was open for the Australian dollar to find its market value and move towards the correction of a long-standing balance of payments disequilibrium.

Initially, falls in the exchange rate were limited, with the dollar falling from about 90 cents (US) to 86 cents (US). Although the dollar was floating, there was evidence that the Reserve Bank was intervening, being a net buyer of foreign exchange in 1983–84 and a seller in 1984–85 and 1985–86. Although this prevented a greater collapse in the value of the Australian dollar in the latter period, it had still fallen to just under 60 cents (US) by July 1986.

RECOVERY DURING THE LATE 1980S

As Figure 19.2 illustrates, over the 1986–87 to 1988–89 period the exchange rate regained much of the ground lost during the previous three years, reaching a high of just over 88 cents (US) by January 1989. During this period the Reserve Bank intervened heavily in the foreign exchange markets in an attempt to prevent too great an erosion of the competitive boost provided to Australian industry by the earlier depreciation. This pressure for appreciation of the exchange rate reflected the size of the capital inflows—needed to fund the current account deficit—that were attracted by Australia's relatively high interest rates.

THE EARLY 1990S AND THE RECESSION WE HAD TO HAVE

The period from 1989–90 to 1992 saw a gradual, although not always smooth, reduction in the level of the exchange rate to just over 67 cents (US) (see Figure 19.2). The downward movement in the value of the Australian dollar partly reflected a reduction in the level of capital inflows, due to reductions in interest rates (see Chapter 12), rather than a general improvement in the current account balance. This was associated with the onset of a severe recession in economic activity through the first part of the 1990s that had been precipitated by very heavy use of monetary policy in the 1989–90 period. As Australia recovered from the recession, it still awaited the much-needed improvement in its trading position that devaluation and an increasing orientation towards overseas markets were supposed to provide.

THE LATE 1990S AND THE ASIAN CRISIS

During the mid-1990s the level of the Australian dollar again began to increase strongly, reaching a peak of 79.65 US cents in December of 1996. This reflected high real interest rates and strong growth in the Australian economy. The prospects looked good for a sustained recovery in the value of the currency. However, the late 1990s witnessed a period of severe financial crisis in Asia, and Australia's currency again shrank in value, declining to 56.91 US cents by August of 1998. The reasons for the response of Australia's exchange rate to the financial collapse associated with the Asian crisis are varied, but essentially the result was weakened demand for the Australian currency. This reflected the currency's role as a highly liquid play on the Asian area, the detrimental impact of the collapse in incomes in Asia on our exports, and the strong growth in the Australian economy and the associated deterioration in the value of our current account balance.

More recently, the value of the Australian dollar has increased, reflecting improvements in the price of Australia's primary exports and increases in interest rates. However, the poor condition of Australia's current account balance relative to its GDP suggests that we must ask whether this recovery is sustainable.

Concept Highlights

- The Australian dollar was fixed in relation to the US dollar from 1971 to 1974.
- From late 1974 to 1976 the Australian dollar was linked to a basket of currencies weighted by trade in those currencies.
- The dollar was operated on a 'managed float' basis from 1976 and was floated in December 1983.
- Much of the longer-term movement in the value of the Australian dollar can be explained in terms of the changing size and structure of our balance of payments accounts, particularly the size of our current account deficit.

SUMMARY

1 The two polar systems for determining the exchange rate are the floating and fixed exchange rate systems.

2 Under a floating exchange rate system, the level of the exchange rate is determined purely by the market forces of supply and demand. Under floating rates a currency will depreciate or appreciate as a result of changes in tastes, relative income changes, relative price changes and relative changes in real interest rates, and because of speculation.

3 The benefit of a freely floating exchange rate system is that an automatic balance in the balance of payment will always be achieved without the intervention of the monetary authority. A deficit (surplus) on the current account will be offset by a surplus (deficit) on the capital account—a truism. However, flexible exchange rates do not ensure external balance. There must be a sustainable balance on the current account for this to occur.

4 Arguments against flexible exchange rates include:

(a) the possibility of diminished trade as a result of uncertainty on prices and profits brought about by movements in the exchange rate

(b) the potential for continually declining terms of trade

(c) instability in the macroeconomic environment due to the impact of shifts in net exports brought about by changes in the exchange rate.

5 Maintenance of fixed exchange rates requires adequate reserves to accommodate periodic payments deficits. The government must intervene in the market to ensure that the total demand for and total supply of currency are such that the target exchange rate level is maintained.

6 A supposed advantage of fixed exchange rates is that, unlike flexible exchange rates, they provide stability in which to conduct and expand international trade.

7 The disadvantage of fixed exchange rates is that if foreign exchange reserves are inadequate, nations must enact activist economic policy to maintain the exchange rate. These include:

(a) implementing protectionist trade policies to increase net exports

(b) engaging in exchange controls, so that imports may be financed only through the proceeds of exports

(c) using fiscal and monetary policies to adjust the equilibrium level of real domestic income to a level consistent with exchange rate equilibrium at the target exchange rate level.

8 The three major systems of exchange rates used during the past century include the gold standard, the Bretton Woods system and the managed float. In the 1929–45 period, the depression and World War II severely disrupted the volume and pattern of world trade and led to the demise of the gold standard, the first of the exchange rate systems discussed.

9 The post-World War II international monetary system—the Bretton Woods system—was committed to an adjustable-peg system of exchange rates. In particular, the International Monetary Fund (IMF) was created to make short-term foreign currency loans to help nations meet temporary payments deficits, and to provide for orderly adjustment of exchange rates to help correct fundamental payments deficits.

10 The use of the US dollar as a key currency (as international monetary reserves) in the Bretton Woods system created a dilemma. Chronic deficits on the US balance of payments raised doubts about the continued convertibility of the dollar into gold and, therefore, about the status of the dollar as a key currency. However, such deficits were required to increase international reserves. Sharp increases in the US deficit in 1971 forced the abandonment of dollar convertibility into gold, shattering the Bretton Woods system.

11 The current system is one of managed floating exchange rates. Under this system, central banks buy and sell foreign currencies to smooth out or 'manage' short-term fluctuations, but exchange rates are allowed to float or fluctuate in response to more fundamental changes in a nation's exports and imports. To provide greater international liquidity, special drawing rights (SDRs) have been introduced by the IMF. At the same time, the IMF has moved to ensure the demonetisation of gold.

12 Proponents of the managed float argue that (a) the growth of world trade has not been retarded by floating rates; and (b) the system has accommodated the turbulent economic developments of the 1970s and 1980s. Critics contend that the system (a) has an inflationary bias; and (b) may be prone to breakdown because the behavioural guidelines and constraints of the system are poorly defined.

13 The Australian dollar was fixed in relation to the US dollar from 1971, and to a basket of currencies weighted by trade in those currencies from 1974. The dollar was operated on a 'managed float' basis from 1976 and was floated in December 1983. Much of the longer-term movement in the value of the Australian dollar can be explained in terms of the changing size and structure of our current account deficit.

KEY TERMS *and* CONCEPTS *to remember*

adjustable-peg system of exchange rates	625	floating exchange rates	616
Bretton Woods system	625	gold standard	622
devaluation and revaluation	634	International Monetary Fund (IMF)	625
euro	628	international monetary reserves	619
European Monetary System (EMS)	628	key currencies	627
exchange controls	620	managed floating exchange rates	628
exchange rate depreciation and appreciation	617	special drawing rights (SDRs)	629
fixed exchange rates	618	stabilisation fund	626
		trade-weighted index	634

QUESTIONS *and* STUDY SUGGESTIONS

Discussion & review

1 What is the basis of a floating exchange rate system as a method of determining the international value of a currency? How does this differ from a system of fixed exchange rates? Explain.

2 'A rise in the dollar price of yen necessarily means a fall in the yen price of dollars.' Do you agree? What are the correct terms for each of these exchange rate movements?

3 Illustrate and elaborate: 'The critical thing about exchange rates is that they provide a direct link between the prices of goods and services produced in all trading nations of the world.'

4 What factors underlay the disintegration of international trade and finance in the 1930s and 1940s? Explain the impact of each.

5 Describe the Bretton Woods monetary system, identifying the role of the International Monetary Fund (IMF) and the adjustable-peg system of exchange rates. What constituted international reserves under this system? How did the system collapse?

6 How do special drawing rights (SDRs) function as international monetary reserves? Comment on the statement: 'The creation of SDRs is part of the IMF's program to demonetise gold.'

7 Explain the adjustments that would occur in response to a chronic payments deficit under:

(a) the gold standard

(b) the Bretton Woods system

(c) the managed float.

8 Outline the history of Australia's exchange rate against the US dollar. What has been the main factor in its general reduction in value over the last two decades?

Problems & exercises

1 Assuming a system of floating exchange rates between Japan and Australia, indicate whether each of the following would cause the yen to appreciate or depreciate:

(a) Australia unilaterally reduces tariffs on Japanese products.

(b) Japan encounters severe inflation.

(c) Deteriorating political relations reduce Japanese tourism in Australia.

(d) Australia's economy moves into a severe recession.

(e) The Reserve Bank embarks upon a tight money policy.

(f) Japanese products become more fashionable to Australians.

(g) The Australian government invites Japanese firms to invest in oil fields.

(h) The rate of productivity growth in Australia diminishes sharply.

2 Using diagrams, explain in detail the means or mechanisms by which a balance of payments surplus would be resolved under:

(a) flexible exchange rates

(b) fixed exchange rates.

Now trace the resolution of a payments deficit. What are the advantages and shortcomings of each system of exchange rates?

Application & analysis

1 Explain whether or not you agree with the following statements:

(a) 'A country that grows faster than its major trading partners can expect the international value of its currency to depreciate.'

(b) 'A nation whose interest rate is rising more rapidly than interest rates in other nations can expect the international value of its currency to appreciate.'

(c) 'A country's currency will appreciate if its inflation rate is less than inflation rates in the rest of the world.'

2 Explain and illustrate:

(a) 'Policies that stimulate the domestic economy (*ceteris paribus*) tend to cause a depreciation of the currency.'

(b) 'Balance of payments equilibrium will quickly result for all nations if their relative prices are in proper relationship to one another. The only systematic means of achieving these proper relationships is through a system of freely fluctuating exchange rates.'

(c) 'Monetary gold is a barbaric relic of the past that should be given no role in an efficient international monetary system.'

3 What is the role of the IMF in the international monetary system? To explore this, visit its website at:
http://www.imf.org/

How has the role of the IMF changed over time? List a few of these changes and describe the recent international financial crises in which the IMF has intervened.

NOTES

1 At some cost a trader can circumvent a portion of the risk of unfavourable exchange rate fluctuations by 'hedging' in the 'forward market' for foreign exchange.

2 Economists continue to debate the relative merits of floating and fixed exchange rates. See, for example, Jacques R. Artus & John H. Young, 'Flexible Exchange Rates: A Renewal of the Debate', in John Adams (ed.), *The Contemporary International Economy*, 2nd edn, St Martin's Press, New York, 1985, ch. 17.

3 Delbert A. Snider, *Introduction to International Economics*, 7th edn, Richard D. Irwin, Inc., Homewood, Ill., 1979, p. 352.

4 Richard E. Caves & Ronald W. Jones, *World Trade and Payments*, 3rd edn, Little, Brown and Company, Boston, 1981, p. 471.

5 The Reserve Bank continued to announce (in conjunction with other officials from Treasury and the Prime Minister's department) the rate of exchange for the Australian dollar in terms of US dollars—but its value varied daily so as to keep constant the average value of the Australian dollar against the basket of currencies of the countries with which Australia traded, weighted in accordance with the trading significance to Australia of each country.

A LAST WORD SLIMING THE BRETTON WOODS DUO

The roles and operations of the International Monetary Fund (IMF) and the World Bank are continually under scrutiny. Some, including members of America's Congress, feel that the role of the IMF should be amended so that it is able to assist only those countries in financial crisis. Aid to poor countries should become the province of governments, not international institutions. The Meltzer report contains many of these arguments.

When a report sponsored by America's Congress, and embraced by senior Republicans, argues that the IMF and the World Bank should be radically scaled back, but that foreign aid to the poorest countries should be dramatically increased, it is hard not to be cynical. America is one of the world's stingiest donors of foreign aid. It spends a measly 0.1 per cent of GDP on development aid a year, by far the lowest of any industrialised country. In countless budget battles Republicans have masked their parochialism with rhetoric about international bureaucracies and contempt for corrupt foreign countries.

Put aside that cynicism. Does this report (known as the Meltzer report, after the committee's Allan Meltzer of Carnegie-Mellon University, and signed by Jeffrey Sachs, a well-known development economist at Harvard) offer sensible principles for reforming international financial institutions and for rebuilding a consensus for foreign aid in America?

The report argues that the IMF should concentrate on one big market failure: financial panics in which solvent economies cannot borrow. It should stop having detailed loan agreements with economic strings attached. To be eligible for IMF support, countries should pass four preconditions, including adequately capitalised banks and a yet-to-be-determined criterion for fiscal prudence. The money should be lent short-term and at penal rates. Only in systemic crises should non-eligible countries receive Fund bail-outs. And it should not lend at subsidised rates to the poorest countries.

This vision of the IMF providing liquidity to healthy countries as a central bank might provide it to healthy banks is not new; a small library of academic papers is devoted to the subject. It is, nonetheless, appealing. How much better to have a clearly focused IMF than today's grubby combination of geopolitical slush fund and emerging-economy schoolmaster. Unfortunately, the appealing principle does not translate easily into practice.

It is, first of all, impossible to devise preconditions ensuring that basically sound but strapped-for-cash countries get IMF money. Make eligibility conditions too stringent and too few countries would qualify; but bail-outs of big countries would be justified because of 'systemic risk'. Make them too loose and moral hazard would increase because investors would expect bail-outs of too many countries. But the Meltzer report is, nonetheless, a sensible direction for IMF reform. Countries with better banking systems and more prudent economic policies should have easier access to money at lower interest rates than those that do not. The IMF should provide incentives for countries to aspire to better financial standards.

Developing principles

Underlying the report's vision for the development banks such as the World Bank is a similarly attractive principle. In a world where private capital flows to poor countries dwarf official assistance, development banks should do what markets cannot or will not do. They should provide international public goods (such as research into the treatment of tropical diseases) and should transfer resources to alleviate poverty in the very poorest countries, and those that do not have access to private capital.

That hardly seems today's practice. According to the report, some 70 per cent of the Bank's non-concessional lending over the past seven years has gone to 11 countries (including China, Argentina, Mexico and Brazil) that had access to capital markets. And, it says, almost half of the Bank's lending to countries with access to capital markets in the 1990s went to activities from which the private sector can profit.

Given that poverty alleviation is the Bank's ostensible goal, this is odd. It is true that the Bank's lending has become more focused on social sectors recently, and it is also true that the majority of the world's poor people live in countries such as China or Brazil, which do have access to capital markets. But, as the report points out, the fact that there are poor people in a country with such access does not self-evidently justify lending by the Bank.

Often, such countries' failure to spend on the poor is down to bad budgeting. That is why the report recommends phasing out all development-bank lending to countries with investment-grade ratings, or an income per head of over $4000. Instead, resources should focus on the poorest: countries with income per head of less than $2500. Those in between, and those with erratic access to capital markets, would get limited aid. Again, however, the attractive principle faces a murky reality. Countries' access to private capital is more limited than aggregate figures would suggest.

On occasion, the Bank can be a catalyst for private sector money. In the aftermath of Asia's crisis, Bank guarantees helped to speed up countries' return to the capital markets. And with the advice and conditions it attaches to its loans, World Bank lending arguably fosters good economic policy better than the private sector. But even these qualifications do not undermine the basic direction of sensible reform: not to concentrate resources on countries with access to capital markets.

The real risks of refocusing the Bank more explicitly on the poorest countries are political. The Bank itself is a mechanism to raise resources for the poorest. Roughly a third of the Bank's profits are spent on debt relief and subsidised loans. In principle, as the Meltzer report suggests, it might be more efficient just to spend the money directly. The danger, however, is that the Bank's shareholders would use this as an excuse to cut their own foreign-aid budgets still more. Then you would lose the Bank's benefits for middle-income countries and also have less money for the poorest. To expect such an outcome would, of course, be much too cynical.

SOURCE: Economist, *18 March 2000.*

Questions

1 What are the potential dangers suggested in the article for foreign aid for the poorest nations and the use of IMF funds if the proposals of the Meltzer report were adopted?

2 What role would the IMF play under the proposals contained in the Meltzer report? In what way would this change the current focus of the IMF? Explain.

3 What does the Meltzer report suggest about the balance between public and private capital flows in ameliorating poverty? What impact would adoption of the changes suggested in the report have on this balance? Which countries might lose significant amounts of World Bank support? Explain.

4 Discuss how the recommendations of the Meltzer report could enable the richer nations to have greater influence on development and on institutional arrangements in the world's poorest nations?

GLOSSARY

Actual investment the sum of planned and unplanned investment over a specified time period.

Actual saving the level of saving achieved by households, based on the incomes that they receive and the MPS.

Adjustable-peg system of exchange rates system by which members of the IMF were obligated to define their monetary units in terms of gold (or US dollars), establishing par rates of exchange between the currencies of all other members; and to keep their exchange rates within 1 per cent of these par values.

Aggregate a collection of specific economic units that are treated *as if* they were one unit.

Aggregate demand curve represents the amount of goods and services, real GDP, that will be purchased at each possible price level.

Aggregate expenditures the sum of expenditures on consumption (C), investment (I), government purchases (G), and net exports (NX).

Aggregate expenditures – output approach to income determination the model that utilises the relationship between aggregate expenditures and output to determine the equilibrium level of national income.

Aggregate supply curve indicates the level of real domestic output that will be produced at each possible price level.

Aggregate supply shocks sudden changes in one or more of the determinants of supply, e.g. the OPEC oil shocks, leading to rapid changes in supply conditions affecting real GDP, the price level and employment.

Allocative efficiency occurs when all available resources are devoted to the combination of goods most wanted by society.

Asset demand for money the demand for money as a financial asset and store of wealth.

Assets items of economic and financial value.

Average propensity to consume (APC) the fraction, or percentage, of any given total income that is consumed.

Average propensity to save (APS) the fraction, or percentage, of any total income that is saved.

Balance of payments account a statement recording all the transactions that take place between a country's residents (including individuals, businesses, and government units) and the residents of all foreign nations.

Balance of trade the difference between a country's merchandise (goods) exports and its merchandise imports.

Balance sheet a statement of assets and claims that summarises the financial position of a firm at a point in time.

Balanced-budget multiplier the multiplier showing the amount by which equilibrium output is increased, following the use of a discretionary fiscal policy that neither increases nor decreases the budget deficit (due to equal increases in both government spending and taxes).

Bartering the exchange of one good or service for another good or service.

Base year the year containing the reference price level and output, relative to which price levels or outputs in other periods are judged.

Basic social capital public infrastructure and utilities, e.g. roads, railways, schools, hospitals, housing, power stations.

Break-even income the level of income at which consumption expenditure exactly equals households' income.

Broad money M_3 *plus* the borrowings from the private sector of non-bank financial institutions (NBFIs) *less* holdings of currency and bank deposits by the NBFIs.

Business cycle the recurrent, somewhat cyclical, increases and decreases in the level or rate of growth in economic activity that typify the

pattern of progress of our economy's real GDP over time.

Capital all the manufactured aids to production used to produce goods and services and distribute them to the final consumer without directly satisfying human wants.

Capital account balance the sum of net capital transfers (migrants' transfers and aid flow related to capital formation) and net sales of patents, copyrights, trademarks, franchises and embassy land (non-produced, non-financial assets).

Capital adequacy the ability to make claims against shareholders sufficient to cover losses should the bank be liquidated. Currently, the banks are required to maintain financial capital equivalent to 8 per cent of their risk-weighted assets.

Capital flight large-scale outflows of investment funds from the LDCs to the comparative safety of banks and other financial centres of the IACs to prevent either seizure or the erosion of value through inflation or depreciation of the currency.

Capital–output ratio the ratio or relationship between net increases in the size and value of the capital stock (net investment) and sustainable increases in real GDP (capacity output).

Classical theory of employment the view that underspending in a capitalist economy was highly unlikely, and that where this did happen the price system, through rapid adjustment of all prices (including interest rates and wages) would act to ensure the rapid return to full employment.

Closed economy assumption the assumption that both the product and financial markets of the economy are fully isolated from the rest of the world.

Commodity terms of trade the rate at which one commodity can be exchanged for another expressed in physical units of each commodity.

Comparative advantage the ability to produce a commodity at relatively low opportunity cost in terms of the amount of the alternative commodity forgone.

Complementary goods goods that are used in conjunction with each other. In addition, there is an indirect relationship between the price of one good and the demand for another.

Complex multiplier the multiplier that arises when all leakages—saving, taxes and imports—are taken into account. It is represented by:

$$\frac{1}{[1 - MPC(1 - MPT) + MPM]} \text{ or } \frac{1}{[MPT + MPS(1 - MPT) + MPM]}$$

Consumer price index (CPI) measures the price level of a 'market basket' of a variety of consumer goods and services that are purchased by a 'typical' family.

Consumption schedule a schedule of the income–consumption relationship, showing the amounts households plan or intend to consume at various possible levels of disposable income.

Contractionary fiscal policy discretionary budgetary policy that decreases government spending, increases taxes, or combines these actions, to reduce or eliminate inflationary pressures in the economy.

Cost ratio the rate at which we can exchange production of additional units of one commodity for another commodity. This is the 'opportunity cost of production' of the commodity and reflects the movement of resources between the two sectors.

Cost-push inflation inflation associated purely with shifts in aggregate supply, due to cost factors, along a stable aggregate demand curve. Often explained in terms of the market power of unions and businesses.

Currency the coin and note components of the money supply.

Current account balance the sum of the goods and services balance, income balance and current transfers balance.

Current transfers balance net transfers (public and private) from the rest of the world to Australia, including net pensions paid to/from Australia and net remittances to/from relatives abroad.

Cyclical peak that point of the business cycle where economic activity has reached a temporary maximum.

Cyclical unemployment unemployment caused by the business cycle, that is, by a deficiency in aggregate demand or total spending.

Cyclically adjusted budget deficit indicates what the budget deficit (or surplus) would be if the economy were to operate at potential output throughout the year.

Demand-pull inflation inflation associated purely with shifts in aggregate demand, resulting from changes in the components of aggregate expenditures, along a stable short-run aggregate supply curve. The economy attempts to spend beyond its capacity to produce—beyond its 'potential' level of output.

Dependent variable variable which changes as a consequence of a change in some other (independent) variable; the 'effect' or outcome.

Deposit, credit or monetary multiplier the reciprocal of the required reserve ratio, showing the maximum number of new dollars of deposits that can be created for a single dollar of excess reserves.

Depreciation the annual charge that estimates the amount of capital equipment used up in each year's production.

Depression a severe and prolonged recession.

Devaluation an increase in the number of units of the domestic currency required to purchase a unit of foreign currency under the fixed or pegged exchange rate systems.

Direct relationship where the values of two related variables change in the same direction.

Discouraged workers those workers who, after unsuccessfully seeking employment for a time, become discouraged and drop out of the labour force but would return if a suitable job prospect arose. Often referred to as the 'hidden unemployed'.

Discretionary fiscal policy the deliberate manipulation of taxes and spending by government for the purpose of altering real GDP and employment, controlling inflation and stimulating economic growth.

Disguised unemployment unemployment that is not recognised, or measured, because the individuals concerned are currently 'employed', although they are underemployed and contribute little or nothing to total output.

Disinflation reductions in, or elimination of, the rate of inflation.

Double-counting the separate inclusion of intermediate consumption in the value of final goods and services. The value of final goods and services includes any intermediate consumption required during the production process.

Easy money policy RBA actions designed to reduce the cash rate, lowering the cost and increasing the availability of bank credit, in order to expand spending and real GDP.

Economic growth increases in real GDP or real GDP per capita that occur over the long term.

Economic resources all the natural, human and manufactured resources that go into the production of goods and services.

Economics is concerned with the efficient use of limited productive resources for the purpose of attaining the maximum satisfaction of our material wants.

Efficiency the result of using or administering scarce resources to produce the maximum amount of desired goods and services, thereby achieving the greatest possible fulfilment of society's wants.

Entrepreneurial ability the human resource which combines the other resources to produce a product, make non-routine decisions, innovate, and bear risk.

Entrepreneurial class the group in the community willing to bear risks, accumulate capital and provide the organisational requisites essential to economic growth, in return for incomes in the form of profit.

Equation of exchange the basic equation of the monetarist school, given as: $MV = PQ$, where M is the supply of money; V is the velocity of money (that is, the number of times per year the average dollar is spent on final goods and services); P is the price level; and Q is the level of real domestic output.

Equilibrium output the level of total output that exists when the flow of income created by the production of the output gives rise to a level of total expenditures sufficient to clear the product market of that output.

Exchange controls government rationing of the supply of foreign exchange among importers, with the objective of restricting imports to the amount of foreign exchange earned by exports.

Exchange rate the price of a unit of one currency expressed in units of another currency.

Exchange rate appreciation a reduction in the number of units of a country's currency required to buy a single unit of some foreign currency.

Exchange rate depreciation an increase in the number of units of a country's currency required to buy a single unit of some foreign currency.

Exchange rate overshooting the process by which adjustments in the exchange rate in the short term exceed those consistent with longer-term equilibrium, due to differences in the speed of adjustment between asset market prices and product market prices.

Exchange settlement accounts accounts kept by banks with the Reserve Bank to settle debts owing to other banks that arise as a result of the exchange of cheques, and to provide funds on which to draw additional notes and coin.

Excise duty a specific levy per physical unit usually placed on alcohol, tobacco and petroleum products.

Expansionary fiscal policy the use of increased government spending and/or lower taxes, thereby increasing the government budget deficit, to stimulate economic activity and move the economy out of recession or depression.

Expenditures approach to GDP measures GDP as the sum of all the expenditures involved in taking that total output off the market.

External balance a level of the current account consistent with the maintenance of existing (or growing) levels of consumption, employment and national output over the long term.

Fiat money money that draws its value from government decree, not through backing by precious metals or other valued commodities.

Final goods and services goods and services that are being purchased for final use and are not to be subject to further processing, manufacturing or resale.

Financial account balance the net flows of funds associated with direct investment in shares and portfolio investment via shares and institutional loans, other investment and changes in the value of reserve assets.

Fixed (or pegged) exchange rates exchange rates for which the values are determined by government decision.

Floating exchange rates exchange rates for which the values are determined by the unimpeded forces of supply and demand.

Foreign-purchases effect a rise in our domestic price level will increase our imports and reduce our exports, reducing net exports.

Free on board (fob) valuation of exports and imports is that for the actual goods and excludes service costs.

Frictional unemployment the level of unemployment associated with the efficient movement of workers between jobs, due to voluntarily switching jobs, to seasonality and to labour market entry. Allows for the movement of labour from low-productivity to higher-productivity areas.

Full employment a situation of labour market balance consistent with output at the economy's potential output level; the employment of all available resources. Cyclical unemployment is absent.

Full production the maximum amount of goods and services that can be produced from the employed resources of an economy.

Fundamental objective of monetary policy to assist the economy in achieving a full-employment, non-inflationary level of total output.

Gains from trade increases in consumption of goods and services through the efficient allocation of resources and international exchange.

GDP gap the amount by which the actual level of GDP falls short of the potential level of GDP.

Gold standard a system under which the value of a nation's monetary unit was backed by gold rather than fiat.

Goods and services balance the net difference between value of exports and imports of current goods and services.

Government purchases of goods and services (*G*) the sum of government final consumption expenditure, government gross fixed capital expenditure, and the increase in stocks of authorities.

Gross domestic product (GDP) the total market value of all final goods and services produced in the economy during a specific period.

Gross private investment (*I*) private gross fixed capital expenditure *plus* increases in stocks.

Growth economics the area of economics concerned with the analysis of the patterns of long-term trends in an economy's productive capacity and the factors that influence and may alter these trends.

Human capital the embodiment of productive capacity in the labour force; investment in people.

Hyperinflation sustained very rapid increase in the level of prices (very high inflation), leading to rapid erosion of the value of the monetary unit.

Implicit price deflator (IPD) a broadly based measure of the average level of prices in the economy, based on consumer goods and services, investment goods, goods and services purchased by government, and goods and services exported and imported.

Income approach to GDP measures GDP as the sum of the income derived or created from the production of the GDP.

Income balance net interest, dividend payments and reinvested earnings, plus net payments made to employed workers located outside their official country.

Incomes policies government intervention in the labour and product markets designed to constrain both nominal incomes and prices paid in order to influence real income outcomes.

Independent goods goods that are not related at all, so that a change in the price of one good will have negligible impact on the demand for the other.

Independent variable variable which causes a change in some other (dependent) variable.

Indirect taxes sales taxes, excise taxes, licence fees and customs duties. Business firms treat these taxes as costs of production and therefore add them to the prices of their products.

Industrially advanced countries (IACs) those of the world's nations with a high income per capita.

Inferior goods commodities whose demand varies inversely with money income.

Inflationary expectations expectations about the likely future path and rate of increase of the general level of prices.

Inflationary gap the amount by which aggregate spending exceeds that required to achieve the full-employment level of GDP. This excess of aggregate expenditures produces an inflationary impact upon the economy.

Injection that component of spending that is not related to consumption spending by households, representing a supplement or addition to the income–expenditures stream (e.g. investment expenditure by businesses).

Interest-rate effect as the price level rises so do interest rates; rising interest rates cause reductions in certain kinds of consumption and, most importantly, investment spending.

Intermediate consumption the cost of intermediate goods and services.

Intermediate goods and services goods and services that are subject to further processing, manufacturing or resale.

International Monetary Fund (IMF) the international institution established to monitor and assist in the functioning of the post-World War II international monetary system.

International monetary reserves stocks of foreign monies owned by a particular government.

Inverse relationship where the values of two related variables move in opposite directions.

Investment the process of producing and accumulating capital goods.

Investment-demand schedule a schedule of the investment – interest rate relationship. The schedule shows the cumulative level of investment demanded at various possible levels of the interest rate.

Keynesian economics the body of theory refined and extended from the economics of Keynes. The schools of thought associated with this body of theory view the capitalist economy as inherently unstable and likely to achieve equilibrium with considerable unemployment or severe inflation, rather than a sustainable full-employment, level of output.

The Keynesian equation the basic formulation of the aggregate expenditures basis for GDP: $C + I + G + NX$ = GDP, showing that, in equilibrium, aggregate GDP expenditures equal GDP.

Labour a broad term the economist uses for all human physical and mental talents (excluding entrepreneurial ability) that can be used in producing goods and services.

Labour- (land-, capital-) intensive commodity a commodity in which the production process uses relatively large amounts of the labour (land, capital) resource compared to the average rate at which this resource is combined with others in the economy's production process.

Land an economic resource which includes all the natural resources that go into the production of goods and services.

Land reform the reform of current systems of ownership and tenure so as to improve the efficiency of allocation of land used for agricultural production.

Law of demand the inverse relationship between the price and the quantity demanded of a good or service during some period of time.

Law of diminishing returns as successive equal increments of one resource (e.g. labour) are added to a fixed resource (e.g. land), beyond some point the resulting increases in total output (marginal products) will diminish in size.

Law of one price when converted to a common currency value through the exchange rate, the price of identical goods should be the same across national boundaries.

Law of supply the direct relationship between the price and the quantity supplied of a good or service during some period of time.

LDC debt crisis an inability to service existing debt obligations and to attract further debt which resulted from a convergence of forces during the 1970s and 1980s, and which has had serious adverse effects on the ability of the LDCs to improve their rates of economic growth.

Leakage that part of income paid to households that is not consumed by households, representing a withdrawal or diversion of potential spending from the income–expenditures stream (e.g. savings).

Leakages–injections approach to income determination the model that utilises the required relationship between leakages from and injections back into the expenditure flow to determine the equilibrium level of national income.

Legal tender an acceptable form of payment for debt owed.

Less developed countries (LDCs) those of the world's nations that have low per capita incomes; that is, they are less developed in their ability to provide incomes and economic consumption for their population.

Liabilities the financial claims of non-owners (creditors) against the firm's assets.

Lump-sum tax a tax that collects the same amount of tax revenue, the lump sum, at each level of GDP.

M_3 the sum of currency (coins and notes), current (or demand) deposits in banks upon which cheques can be drawn, and non-current deposits in banks (e.g. savings).

Macroeconomic stability the simultaneous existence of full employment, price level stability, and external balance.

Macroeconomics is concerned either with the economy as a whole or with the basic subdivisions or aggregates that make up the economy.

Malthus's thesis given diminishing returns, persistent and substantial population growth will force and maintain the standard of living close to the subsistence level.

Managed floating exchange rate system the system where central banks buy and sell foreign exchange to smooth out short-run or day-to-day fluctuations in rates to encourage international trade and finance, while allowing for trend or long-term exchange rate flexibility to correct fundamental payments disequilibria.

Marginal propensity to consume (MPC) the ratio of the change in consumption to the change in income that brought about the consumption change. The MPC thus represents the fraction of each additional (or marginal) dollar of income that will be used for consumption expenditures.

Marginal propensity to save (MPS) the ratio of the change in saving to the change in income that brought about the saving change. The MPS thus represents the fraction of each additional (or marginal) dollar of income that will be directed to saving.

Market a mechanism or arrangement that brings buyers ('demanders') and sellers ('suppliers') of a good or service in contact with one another.

Material wants the desires of consumers to obtain and use various goods and services that give utility.

Microeconomics is concerned with *specific* economic units and a *detailed* consideration of the behaviour of these individual units.

Monetary approach to the exchange rate looks at the relationship between the domestic money supply, the domestic demand for money, and the exchange rate.

Monetary base or high-powered money the net *monetary* liabilities of the government to the non-bank public and the banks in the form of currency held by the public, currency held by the banks, and banks' demand deposits with the Reserve Bank of Australia.

Monetary policy influencing the economy's interest rates and credit availability to assist in the stabilisation of real GDP, employment and the price level.

Monetary rule the money supply should be expanded each year at the same rate as GDP.

Money any item which is generally acceptable to buyers and sellers for facilitating the exchange of goods and services.

Money as a medium of exchange money is useable for buying and selling goods and services.

Money as a store of value the role of money as a form in which to store wealth, due to its liquidity and convenience.

Money as a unit of account the use of the monetary unit as a yardstick for measuring the relative worth of heterogeneous goods and resources.

Multiplier the ratio of a change in equilibrium GDP to the original change in investment (or other autonomous) spending that caused that change in real GDP.

Multiplier effect the result that a change in investment (or other autonomous) spending gives rise to a larger change in the output–income level.

Natural rate hypothesis the suggestion that there is a unique level of unemployment around which observed unemployment will fluctuate, but that the economy will tend towards at any point in time.

Natural rate of unemployment the sum of the rates of frictional and structural unemployment.

Net export effect the impact of interest-rate-induced changes in the level of the exchange rate, and thus net exports, following changes in fiscal policy. The net export effect reduces the effectiveness of fiscal policy.

Net exports the difference between the value of our exports and imports ($X - M$).

Net private investment additions to the level of the economy's stock of investment goods made by non-government enterprises.

Net worth the financial claims of the owners of a firm against the firm's assets.

New classical economics the school of thought most closely associated with the use of the RET position, which shares the classical school's belief in the highly competitive markets underlying the economy's operation.

New International Economic Order (NIEO) a new structure for the relationship between the less developed countries (LDCs) and the industrially advanced countries (IACs) which would see a lower level of exploitation of the situation of the LDCs by the IACs, and a recognition of the LDCs as equal partners in the world's economic and political institutions.

Nominal GDP GDP measured at current prices; GDP measured at dollars of the period.

Nominal (or money) income the number of dollars received as wages, rent, interest or profits.

Nominal interest rate the percentage increase in money that the lender receives from the borrower.

Non-bank financial institutions (NBFIs) permanent building societies, credit cooperatives, authorised money market dealers, money market corporations (merchant banks), pastoral finance companies, finance companies, general financiers, and cash management trusts.

Non-discretionary fiscal policy built-in stabilisers that tend to increase the government's deficit, or reduce its surplus, during a recession and to increase its surplus, or reduce its deficit, during inflationary periods without requiring explicit action by policy makers.

Non-financial investment the accumulation of capital by transferring surplus agricultural labour to the improvement of agricultural facilities or to the construction of basic social capital.

Non-productive transactions transactions where no production of goods or services occurs. This includes purely financial transactions and second-hand sales.

Normal goods commodities whose demand varies directly with money income; also known as superior goods.

Okun's law the quantified relationship between the unemployment rate and the GDP gap.

Open-economy multiplier recognises that imports represent a leakage from the aggregate expenditures – income flow. The simple open-economy multiplier is given by:

$$\frac{1}{(MPS + MPM)}$$

where MPM is the marginal propensity to import.

Open-market operations (OMOs) the buying and selling of government securities or repos by the RBA in the cash or short-term money market.

Opportunity cost the amount of other products that must be forgone or sacrificed to obtain a unit of any product.

Paradox of thrift the paradox that if society attempts to save more, it may end up actually saving the same amount, or even less, due to the multiple decline in the equilibrium GDP which the withdrawal of aggregate expenditures causes.

Participation rate those in the specified labour force group expressed as the percentage of the civilian population aged 15 and over in that specified group.

Personal consumption expenditures (*C*) expenditures by households on durable consumer goods, non-durable consumer goods, and on services.

Phillips curve an inverse relationship, suggestive of a trade-off, between inflation and the unemployment rate, apparent in some of the empirical work performed by economists in the late 1950s and 1960s.

Planned investment the level of investment, including inventory investment, that businesses plan to make within the specified period.

Planned saving the level of savings that households intend to achieve over a specified period.

Portfolio balance approach (PBA) looks at changes in exchange rates resulting from shifts in investors' international holdings of assets. These shifts occur in response to changes in the relative real returns, both available and expected, on assets in each country.

Potential output the real level of domestic output that is associated with the natural rate of unemployment.

Preferential tariff treatment a system whereby the IACs place a lower rate of tariff on exports from LDCs than that applied to imports from other IACs, with the objective of stimulating the industrial growth of the IACs.

Price level surprises unanticipated changes in the price level, which allow deviations from long-run supply to occur.

Price–wage flexibility the assumption that all prices, including wages and interest rates, are flexible and rapidly adjust to remove disequilibria.

Price–wage inflexibility the assumption that all prices, including wages and interest rates, are inflexible, especially in the short term, and do not adjust to remove disequilibria over this period.

Prime assets ratio (PAR) the proportion of banks' total liabilities (not including shareholders' funds) that must be held in a highly liquid form. This includes currency, deposits with the Reserve Bank, and government securities. The PAR reflects both negotiations with the Australian Prudential Regulation Authority (APRA) and prudent banking practice.

Principle of comparative advantage that nations should specialise in the production of those goods and services in which they have a comparative advantage, allowing an increase in consumption possibilities through trade and specialisation.

Private economy assumption the assumption that there is no explicit contribution by government to either the product or financial markets.

Productive efficiency occurs when goods or services are produced using the lowest-cost production methods.

Productivity the relationship between real output and the quantity of inputs used to produce it, often measured as average real output per unit of input.

Profit-push inflation inflation brought about by big businesses through their power to adjust or administer price increases not initiated or justified by increases in wage costs.

Public debt the total accumulation of the federal government's total deficits and surpluses that have occurred over time.

Purchasing power parity (PPP) suggests that purchasing power of different currencies should be the same when converted to a common currency value through the exchange rate.

Rapid rural–urban migration the rapid transfer of rural labour to urban centres. Often precipitated by a substantial urban–rural wage differential, which, due to the lack of actual job opportunities in urban areas, leads to substantial increases in unemployment rates.

Ratchet effect the result of the tendency for prices of both products and resources to be individually 'sticky' or inflexible in a downward direction, leading to a loss in downward flexibility of the general level of prices.

Rate of capital accumulation the rate at which net investment, or additions to the capital stock, occurs.

Rational behaviour behaviour that involves decisions and actions made by individuals in order to achieve the greatest satisfaction or maximum fulfilment of their goals.

Rational expectations theory (RET) businesses, consumers and workers understand the workings of the economy and use this knowledge to assess the anticipated effects of current economic policies upon the future of the economy and to make decisions that best further their own self-interests.

Real GDP GDP at constant prices; GDP figures that have been inflated or deflated to account for price-level changes.

Real income the amount of goods and services that can be purchased with money income.

Real interest rate the percentage increase in purchasing power that a lender receives from a borrower in exchange for the borrower's use of the lender's funds.

Real-balances effect (or wealth effect) at a higher price level, the real value or purchasing power of the accumulated financial assets held by the public falls; the fall in real wealth of the public leads to a reduction in consumption expenditures.

Recession a period where rates of growth in both output and employment decline to low or negative levels.

Recessionary gap the amount by which aggregate expenditures are deficient to that required to generate the full-employment level of GDP. This deficiency of aggregate expenditures produces a contractionary or depressing impact upon the economy.

Recovery the phase of the business cycle where the economy's levels of output and employment expand towards the full-employment or capacity level.

Repurchase agreements (repos or RPs) agreements detailing the prices, timing and conditions under which the banks and the RBA may exchange government securities.

Required reserve ratio the ratio of reserves to deposits required to meet official liquidity requirements and additional requirements determined by normal banking practice.

Revaluation a reduction in the number of units of the domestic currency required to purchase a unit of foreign currency under the fixed or pegged exchange rate systems.

Sales tax a levy on the wholesale price of a broad range of products.

Saving schedule a schedule of the income–saving relationship. The schedule shows the various amounts households plan or intend to save at various possible levels of disposable income.

Say's law that the very act of producing goods generates an amount of income exactly equal to the value of the goods produced. Thus the production of any output automatically provides the incomes required to take that output off the market—supply creates its own demand.

Seasonal variations in business activity regular fluctuations in the tempo of business activity that are independent of the business cycle, and that occur particularly in the retail industry (e.g. the pre-Christmas buying rush.

Secular trend the average (or trend) rate of expansion or contraction of an economy over the long term.

Simple multiplier the multiplier based upon the private closed model of the economy, where the $\frac{1}{\text{MPS}}$ formulation reflects only the leakage of saving.

Special drawing rights (SDRs) bookkeeping entries at the IMF, available to IMF members in proportion to their IMF quotas, that may be used to settle payments deficits or satisfy reserve needs in place of foreign exchange or gold.

Stabilisation fund supplies of both foreign and domestic monies and gold held with the central bank or treasury for the purpose of intervention in the foreign exchange market to maintain the par value of the exchange rate.

Stagflation the simultaneous experience of both high and increasing unemployment and inflation.

Strikes a form of industrial action by which employees withdraw some or all of their labour.

Structural unemployment unemployment resulting from mismatches in the skills and geographical location of labour due to changes in the composition of the total demand for labour that have resulted from structural changes in consumer demand and in technology.

Subsidies payments to businesses to encourage production of a particular commodity or use of a particular resource; effectively negative indirect taxes.

Substitute goods goods that can be used in place of another good. In addition, there is a direct relationship between the price of one good and the demand for another.

Supply-side shocks rising product prices caused by increases in costs of raw materials, inputs or energy.

Terms of trade the ratio of the average price of the goods and services exported by a country to the average price of its imports.

Theory of adaptive expectations assumes that people form their expectations of future inflation on the basis of previous and present rates of inflation, and only gradually change their expectations as experience unfolds; thus expectations are backwards-looking, suggesting that continuous forecast errors will be made.

Tight money policy RBA actions designed to increase the cash rate, increasing the cost and reducing the availability of bank credit, in order to constrain spending and reduce inflationary pressures.

Token money money for which the intrinsic value of the commodity used to hold the monetary unit (e.g. a coin or note) is less than the recorded value of the money.

Trade-weighted index an index of the 'average' exchange rate, comprised of a basket of currencies of Australia's major trading partners weighted to reflect their relative importance in our total trade.

Trading possibilities line a line showing the rate at which one commodity can be exchanged for another during international trade. The slope reflects the international commodity terms of trade.

Transactions demand for money the demand for money as a medium of exchange.

Underemployed part-time employees who want more work but either cannot find suitable full-time work or are on short hours because of a temporary slack in consumer demand.

Unplanned investment unintended changes in the level of business inventories.

Utility the economist's term for pleasure or satisfaction.

Value added the market value of a firm's output less the value of its intermediate consumption.

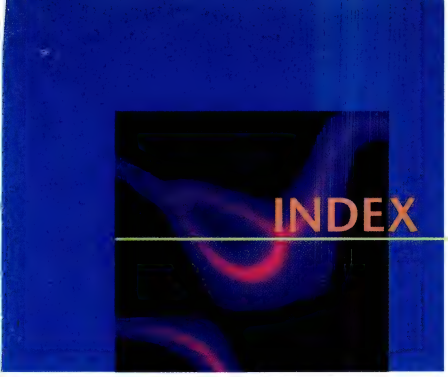
Vault cash or till money currency held by a bank to meet customer's currency needs.

Vicious circle of underdevelopment low per capita incomes are associated with limited ability or incentive to save, and low levels of demand; limited available resources and lack of demand reduce incentives for investment in real or human capital; a lack of investment in real and human capital means that labour productivity is low; output per person is real income per person, so per capita income is low; and so on.

Wage–price inflationary spiral a continuous cycle of money-wage and price rises that feed upon each other.

Wage-push inflation cost-push inflation initiated through wage increases obtained by unions.

World Bank the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC) and the International Development Association (IDA).



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